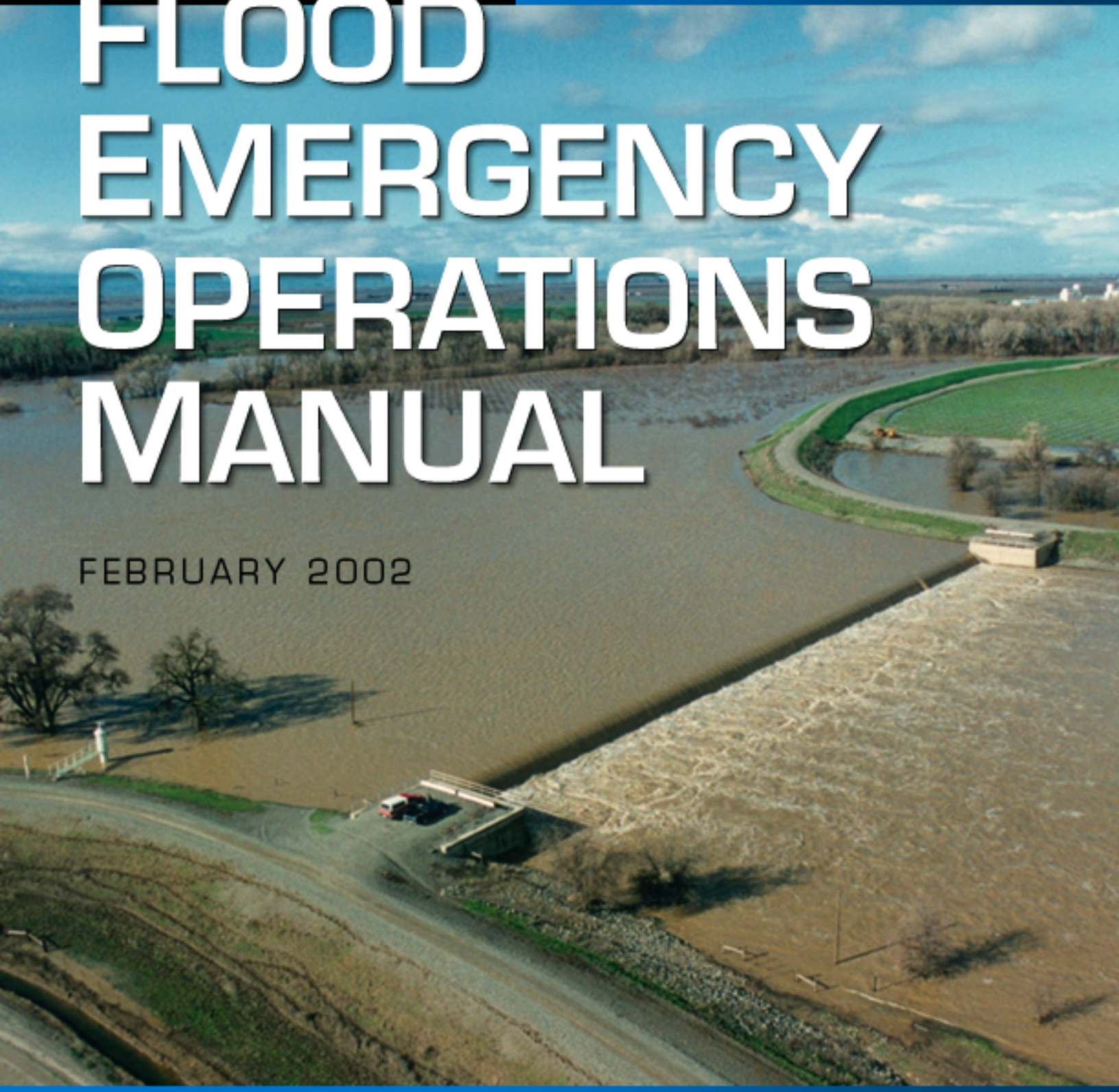
STATE-FEDERAL FLOOD

OPERATIONS CENTER

FLOOD EMERGENCY OPERATIONS MANUAL

FEBRUARY 2002



Mary D. Nichols
Secretary for Resources
The Resources Agency

Gray Davis
Governor
State of California

Thomas M. Hannigan
Director
Department of water Resources

ON THE COVER: An aerial view of overflow from the Sacramento River at Moulton Weir (Colusa County) into the Butte Basin taken January 26, 1997.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
DIVISION OF FLOOD MANAGEMENT

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FLOOD OPERATIONS CENTER
Flood Emergency Operations Manual

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FLOOD OPERATIONS CONTACT INFORMATION

(800) 952-5530 (toll-free, 24-hour)
Press “0” to Speak to Staff (answering service after hours)
Press “4” for Recorded River and Flood Conditions

Refer to the Directory of Flood Officials
for local, State, and federal agency contact information

DWR, Division of Flood Management, Flood Operations Branch
P.O. BOX 219000 (3310 El Camino Avenue, Suite 200)
Sacramento, California 95821-9000

Emergency Response Section and State-Federal Flood Operations Center
Business Phone (916) 574-2619 (24-hour)
Business FAX (916) 574-2798
Media Only (916) 574-1735
TDD Phone (916) 900-3582

Flood Project Inspection Section Business (916) 574-1212
Business FAX (916) 574-1210
Flood Fight Specialist (916) 574-1211

Eureka Flood Center Business Phone (707) 445-6576
Business FAX (707) 445-7860
North Coast River and Flood Conditions Recording (707) 445-7855

RECORDED RIVER AND FLOOD CONDITIONS MENU

(800) 952-5530 (toll-free, 24-hour)

Main Menu
- Press 0 to transfer to staff (answering service after hours)
- Press 4 for recorded river & reservoir conditions & forecasts

River & Reservoir Conditions Menu
- Press 2 for Sacramento Valley and Northern Delta
  - Press 1 for Upper Sacramento River to Tisdale Weir
  - Press 2 for Lower Sacramento River and Tributaries
- Press 3 for San Joaquin River Basin
- Press 4 for Russian and Napa Rivers
- Press 5 for North Coastal Rivers
- Press 6 for Central Coast Rivers
- Press 7 for Tulare Lake Basin

CALIFORNIA DATA EXCHANGE CENTER

On the Internet at http://cdec.water.ca.gov
Help Desk (916) 574-1777

State of California
GRAY DAVIS, Governor

The Resources Agency
MARY D. NICHOLS, Secretary for Resources

DEPARTMENT OF WATER RESOURCES
THOMAS D. HANNIGAN, Director

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DIVISION OF FLOOD MANAGEMENT

Stein Buer, Chief

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1 INTRODUCTION

This manual has been designed to supplement information provided in the Department of Water Resources' Emergency Response Plan, dated May 2000. It describes the coordination of federal, State, and local agency activities at the State-Federal Flood Operations Center prior to and during flood events and emergencies, and is designed to provide a general overview for personnel working at the Center. Activation and operation procedures for the Eureka Flood Center are described separately in the *North Coast Emergency Response Plan, Eureka Flood Center*. All flood operations are planned, coordinated, and executed under guidelines established by California's Standardized Emergency Management System (SEMS).

The Flood Operations Center (FOC) is located in Sacramento, California at DWR's Joint Operations Center (JOC) and is a component of the Division of Flood Management's Flood Operations Branch and Emergency Response Section. The Section is responsible for maintaining year-round operational readiness of the Center.

The FOC (and Section staff when the FOC is not activated) serves as a year-round focal point for gathering, analyzing, and disseminating hydrometeorological information to cooperating agencies, emergency managers, law enforcement, the news media, and the public. During emergencies the FOC provides a centralized source of factual information and technical expertise regarding flood conditions and forecasts to help in these efforts, and a single, multi-agency facility from which DWR can efficiently coordinate flood emergency response.

North coastal flood operations (primarily Del Norte, Humboldt, and portions of Trinity and Mendocino Counties) are locally coordinated at the Division's Eureka Flood Center in Humboldt County with support from the FOC.

The National Weather Service (NWS) and the Department of Water Resources (DWR), Division of Flood Management, Hydrology and Flood Operations Office have effectively coordinated flood forecasting and warning activities for many years. In the years following the 1955 flood DWR and the NWS combined their river forecasting and flood warning programs. DWR and the NWS signed a Joint Project Authority agreement in April 1994. In addition DWR and the U.S. Army Corps of Engineers signed a Memorandum of Understanding in 1956 for cooperative response to flood emergencies. A result of the DWR / NWS partnership was the establishment of a common center to respond to flood emergencies. The new center's name, "State-Federal Flood Operations Center", remains today as a reminder of the unique relationship between the two agencies. No other state agency participates in such a partnership with the National Weather Service. The Center also facilitates cooperation with many other federal, State, and local agencies.

Since the 1960's shortened versions of the name "State-Federal Flood Operations Center", including "Flood Operations Center" and "Flood Center" have been commonly used. With the inception of the Standardized Emergency Management System in 1996

the Center is considered a state level Emergency Operations Center (EOC). To simplify description of the facility throughout the remainder of this document the terms “Flood Operations Center” or “FOC” will be used.

A Department Operations Center (DOC) may be established at the Flood Operations Center in response to non-flood emergencies impacting the Department. For example a DOC was established at the Flood Operations Center to monitor conditions during the Year 2000 rollover. During flood emergencies a DOC will be established at the Resources Building. Refer to the *Department of Water Resources' Emergency Response Plan* on Department Operations Center's and their use in the Department.

1.1 Emergency Planning and Response

The *Department of Water Resources' Emergency Response Plan* addresses the responsibilities of the entire Department including the Flood Operations Center. Figure 1–1 illustrates how responsible entities identified in the DWR Emergency Response Plan are organized with respect to one another and lists key publications authorizing their emergency response operations. Table 1-1 describes the authorizing documents (listed in Figure 1-1) utilized by these emergency response entities.

Figure 1-1: Emergency Planning and Response Relationships

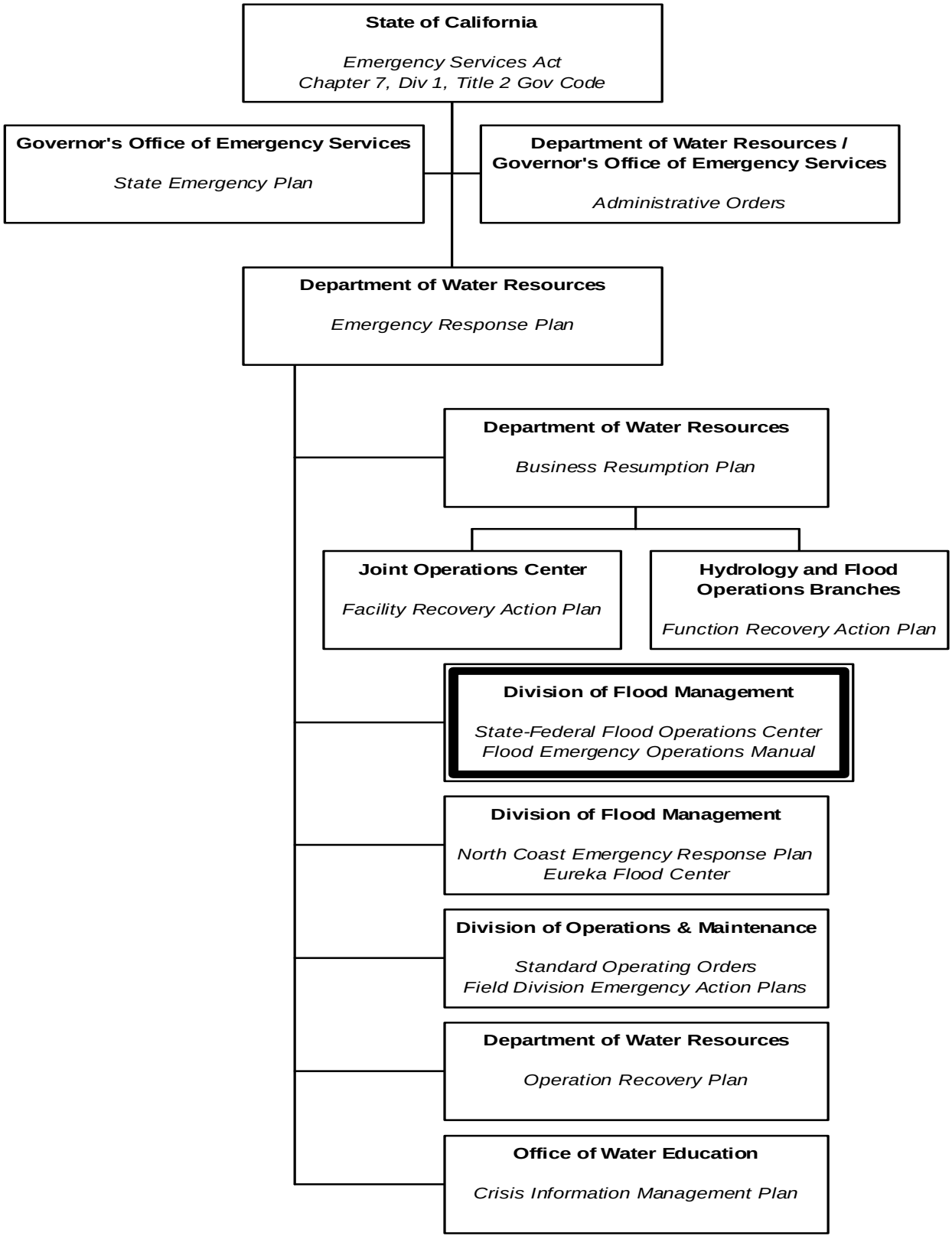


Table 1-1: Description of Key Emergency Planning and Response Documents

State of California *Emergency Services Act (Chapter 7 of Division 1 of Title 2 of the Government Code)* - outlines the responsibilities of the State to mitigate the effects of natural, man-made, or war-caused emergencies which result in conditions of disaster or extreme peril to life, property, and the resources of the State, and generally to protect the health and safety and preserve the lives and property of the people of the State.

Governor's Office of Emergency Services *State Emergency Plan* - guides and directs management of emergency and disaster operations in the State focusing on basic requirements for disaster management and coordination under the Standardized Emergency Management System.

DWR / Governor's Office of Emergency Services *Administrative Orders* - expands upon and consolidates emergency assignments of State agencies.

DWR *Emergency Response Plan* – produced in May 2000, this plan discusses three major types of emergencies including incidents at dams under State jurisdiction, State Water Project emergencies, and flood emergencies. Lead response roles are assigned to the Division of Safety of Dams, the Division of Operations and Maintenance, and the Division of Flood Management, respectively.

DWR *Business Resumption Plan* – establishes an overall structure and process that the Department will follow to recover and resume business functions in the aftermath of disasters or during an emergency. It identifies a process for addressing business recovery and resumption including specific plans for critical functions, remote facilities, and major departmental organizations. It is critical for Flood Operations Center staff and field responders to know the plans for temporary relocation and later return to the Flood Operations Center should the Joint Operations Center become non-functional.

DWR Joint Operations Center *Facility Recovery Action Plan* – facilitates business recovery and resumption for key operations at the Joint Operations Center after partial or complete loss of use of the building. It is a component of the DWR Business Resumption Plan.

Hydrology and Flood Operations Branches *Function Recovery Action Plan* – outlines necessary functions, equipment, and operations in the event of partial or complete loss of the Joint Operations Center facility. It is a component of the DWR Business Resumption Plan

DFM *State-Federal Flood Operations Center Flood Emergency Operations Manual* (this publication) – describes the responsibilities of DWR and cooperating federal, State, and local agencies at the Flood Operations Center to prepare for and respond to high water and flood emergencies.

DFM *North Coast Emergency Response Plan, Eureka Flood Center* – describes the responsibilities of DWR and details a SEMS-based organization for the Eureka Flood Center to prepare for and respond to high water and flood emergencies on California's north coast.

Division of Operations and Maintenance *Standard Operating Orders* - provide a consistent procedure for carrying out essential tasks and reliable operation of the State Water Project facilities for the Division of Operations and Maintenance.

Table 1-1 (continued)

Division of Operations and Maintenance *Field Division Emergency Action Plans* - include basic emergency response procedures and concepts for specific field position assignments, notification flow charts, actions to be taken, and reference information. Specific emergencies include general emergencies, earthquakes, fires, bomb threats/events, floods, dam or aqueduct failures, hazardous spills, civil disturbances, death or injury, and equipment malfunctions affecting water delivery.
DWR *Operation Recovery Plan* - establishes departmental procedures for restoring critical data processing applications and facilities in event of a disaster.
Office of Water Education *Crisis Information Management Plan* - assists all Office of Water Education personnel, particularly those designated as media and public spokespersons, with assigned emergency functions.

1.2 Other Publications

Several other publications are necessary to prepare for and respond to flood emergencies in California. A few publications most pertinent to the mission of the Flood Operations Center are briefly described below, while an extensive list is provided in Appendix B.

Coordination between local, State, and federal agencies is described in the *Guidelines for Coordinating Flood Emergency Operations* prepared by the Governor's Office of Emergency Services and the Department of Water Resources.

Procedures for acquiring emergency technical and flood fight assistance from the U.S. Army Corps of Engineers under Public Law 84-99 are described in the *Memorandum of Understanding between the U.S. Army Corps of Engineers (South Pacific Division) and the California Department of Water Resources for Cooperative Actions Authorized Under Public Law 84-99 for Responding to Flood Emergencies, June 1999*.

Water Resources Engineering Memorandum #63, Levee-Endangering Incidents in the Delta establishes DWR coordination protocols and procedures for responding to flood threats in the Sacramento-San Joaquin Delta.

1.3 Reference Database

Many documents and contact information referenced in this manual are stored in a web-accessible database shared by DWR, OES, and the Corps. This database is part of the Flood Operations Center Information System (FOCIS). FOCIS provides web-based client access and will continue to grow and evolve over time and currently contains the following types of information:

1. Reference information including:
   - Contact lists, including the annual Directory of Flood Officials
   - SEMS / ICS procedures

- Flood operations and emergency response plans and procedures (including an electronic version of this manual)
- Levee Maintaining Agency Plat Maps

2. Flood operations and emergency response reports including:
   - Situation Reports
   - Incident Reports
   - Action Plans
   - SEMS Position Duty Statements
   - High Water Notification Call Logs

The database is linked to the Response Information Management System (RIMS) maintained by the Governor's Office of Emergency Services and other emergency management databases maintained by the U.S. Army Corps of Engineers.

2 MISSION AND RESPONSIBILITIES

One of the Department's primary goals is to regulate dams, provide flood protection, and assist in emergency management to safeguard life and property by supervising design, construction, operation, and maintenance of more than 1,200 jurisdictional dams; encouraging preventive floodplain management practices; maintaining and operating Sacramento Valley flood control facilities; cooperating in flood control planning and facility development; and providing flood advisory information.

The principal mission and goals of the DWR's Flood Management Program are to help prevent loss of life and reduce property damage caused by floods, to assist in recovery efforts following any natural disaster, to provide runoff forecasts, and to maintain a real-time hydrologic database. Flood management activities recognize the importance of environmental resources and strive to protect these and other resources when meeting public safety responsibilities.

During high water conditions, the Department is authorized to:

- Help protect the integrity of all federal and State constructed levee systems within the Central Valley flood control projects and systems.

- Maintain and operate units or portions of the Sacramento River Flood Control Project that are named in Section 8361 of the Water Code.

- Maintain and operate units or portions of Flood Control Projects in the Sacramento or San Joaquin Valleys that are within the maintenance areas supervised by the Department of Water Resources. Section 12878.1 of the Water Code defines this authority.

- Prepare and disseminate flood forecasts as part of a joint State-Federal river forecasting program with the National Weather Service's California-Nevada River Forecast Center.

- Disseminate weather and hydrologic advisories, statements, watches, warnings, and other products as part of a joint State-Federal warning program with the National Weather Service.

- Operate the Flood Operations Center as a focal point for gathering, analyzing, and disseminating current flood information, and to manage the Department's overall flood emergency response.

- Operate the Eureka Flood Center as a focal point for gathering, analyzing, and disseminating current flood information on the north coast.

- Notify levee-maintaining, emergency management, and law enforcement agencies of flood conditions and forecasts.

- Evaluate flood conditions throughout the State and provide the Director of the Department of Water Resources with information needed to declare a Flood Mobilization.

- Provide flood fight technical assistance needed to help prevent the spread of floodwaters and to help protect lives and property. In carrying out such work the Department may undertake the work itself or in cooperation with any other State department or agency, the federal government, or any political subdivision, city, or district.

- Coordinate local, State and federal flood fight activities. For levee-endangering incidents, the FOC, upon request, shall provide technical advice to Levee Maintaining Agencies in meeting their responsibilities for first response to levee-endangering incidents, and advise LMAs to contact their Operational Area (as defined under SEMS) for mutual aid assistance and resources.

- Request Corps of Engineers emergency flood assistance on behalf of local agencies under Public Law 84-99 when the emergency exceeds the resources of both the local agency and the State.

To carry out these responsibilities the Department maintains permanent technical staff skilled in flood forecasting, technical analysis, warning dissemination, public information, and flood management activities.

2.1 River Forecasts

From about mid-October through April a joint State-federal forecast team continuously monitors river stages and weather conditions to maintain awareness of any high water potential. As major storm systems approach California, forecasters from the National Weather Service and Department of Water Resources forecast the location, amount, and timing of expected precipitation and snow level, commonly referred to as a quantitative precipitation forecast or QPF. The QPF is used to produce forecasts of watershed runoff and reservoir inflow that are then used to make initial river forecasts.

Once the storm arrives and runoff begins, updated forecasts are issued as necessary. Reservoir operators adjust flood control releases as inflows increase or downstream channels swell with runoff. Release changes may in turn require revised river forecasts and the forecasting process continues. If runoff is sufficient to raise streams to threatening levels, the NWS and DWR jointly issue these forecasts as official public bulletins. Appendix G lists all official NWS river forecast points by forecast bulletin and river basin and includes Figure G-1 that depicts California's hydrologic regions.

Automated NWS and DWR computer systems disseminate bulletins, and FOC personnel further disseminate this information by making high water notification calls. Depending on the severity of forecasted or actual flooding DWR may declare a Flood Alert or Flood Mobilization.

2.2 High Water Notifications

When streams are forecast to rise above predetermined levels FOC personnel make high water notification calls to appropriate local flood system maintaining and emergency response agencies. On leveed streams maintaining agencies are required to patrol their levees on a 24-hour basis as long as the river level is at or above monitor stage, and until no threat remains to the levees.

2.3 Staffing

When a severe storm pattern or other flood potential develops the Flood Operations Branch may require additional personnel to be temporarily assigned to the Flood Operations Center to meet increasing information needs of the public, media, emergency assistance, and flood management agencies. Regularly assigned personnel from the Flood Operations and Hydrology Branches, the National Weather Service Sacramento Forecast Office, and when applicable, the Information Services Branch of the Office of Water Education expand their regular duties to meet these needs.

When more personnel are required they are first obtained from within the Division of Flood Management (DFM). At the request of the Flood Operations Branch Chief, the Division of Flood Management Chief will assign staff from throughout DFM to work at the Flood Operations Center. While deciding which staff will be assigned, the Chief will take into consideration the workload of different branches, and previous staff training and experience.

2.4 Flood Alert and FOC Activation

Forecasts of sustained storm patterns and resulting flood potentials, coordination of field operations, or requests for technical support from local agencies may require the Flood Operations Branch Chief to declare a Flood Alert to officially activate the Flood Operations Center under the Standardized Emergency Management System. When the Center is activated personnel report for duty on shifts as directed by the Chief of the Flood Operations Branch (functioning under SEMS as the FOC Director) to provide up to 24-hour staffing.

If additional personnel resources beyond the capability of the Division are needed to staff the Flood Operations Center under extended hours (which typically happens under "Flood Alert" status) they will be requested first from the Division of Planning and Local Assistance Headquarters and District Offices and then from other Department of Water Resources' divisions and offices. Department staff outside of DFM upon being released

for Flood Center duty by their respective Division/Office Chief will be utilized according to aptitude, training, and previous experience.

When a Flood Alert is declared, a Flood Alert declaration memorandum must be prepared and distributed. Appendix D provides a sample of how this memo is written along with a distribution list.

2.5 Flood Mobilization

Sustained severe storms and flooding may require further Department personnel, equipment, material, and financial resources for an extended period. To meet this need the Director may, upon the recommendation of the Chief of the Division of Flood Management, declare a Flood Mobilization. When a Flood Mobilization is declared DFM is authorized to use any Department personnel and make expenditures beyond budgeted funding.

When a Flood Mobilization is declared, a Flood Mobilization declaration memorandum must be prepared and distributed. Appendix E provides a sample of how this memo is written along with a distribution list.

2.6 Emergencies and Evacuations

DWR and the NWS do not declare emergencies – they are declared by local agencies (cities or counties) or the Governor. The Office of Emergency Services (OES) is the designated coordinator during a State of Emergency and may task State agencies to perform specific missions based on the established Administrative Orders.

Additionally DWR and the NWS do not issue or recommend evacuation orders. The responsibility for ordering an evacuation of any area remains with local authorities at the city or county level.

DWR and the NWS jointly provide public warnings, factual information, and technical assessments to emergency managers, law enforcement and government agencies so that those entities have the best information to carry out their own emergency action plans. When DWR believes there to be an imminent threat of flooding, it will contact the appropriate Operational Area(s) or Regional Emergency Operation Center(s) so that appropriate actions can be taken.

The publication *Legal Guidelines for Flood Evacuation* published by the Governor's Office of Emergency Services provides a more detailed description of these issues.

2.7 Assistance to Local Agencies and Public Law 84-99

As defined in the *Guidelines for Coordinating Flood Emergency Operations,* emergency response to floods is a three-party (local, State and federal) approach with the local agency having the primary responsibilities for levee maintenance and flood fighting. Levee maintaining agencies include levee and reclamation districts, other special districts, local government agencies, private levee owners, and the Department of Water Resources for State Maintenance Areas.

The Department is the lead State agency for flood fight assistance, and the Division of Flood Management takes the lead to manage DWR's flood emergency response. DWR provides flood fight technical assistance to local agencies and is the State's liaison to the U.S. Army Corps of Engineers for its emergency assistance program under Public Law 84-99.

The local agency has the responsibility to conduct flood fight operations and to utilize all available agency personnel, material, equipment and financial resources. Once LMA's have exhausted their resources, if a flood fight exceeds the capability of the LMA, or if nearby communities are threatened, the LMA may then request assistance through their Operational Area. The operational area will provide assistance first from within the county, which may seek mutual aid, regional assistance, or statewide assistance using all available SEMS levels.

Once a request is made to the State by a local agency, DWR can provide technical advice and assistance concerning flood fight and emergency flood control measures. DWR may provide technical assistance and investigations at any time, but all PL 84-99 assistance requests (technical, flood fight, or repairs) must be submitted through the Operational Area. On incidents where PL 84-99 assistance is anticipated DWR will typically conduct a joint investigation with a Corps of Engineers geotechnical expert. If DWR determines that local and State resources are not sufficient and that an emergency exists, it will request federal assistance from the U.S. Army Corps of Engineers under its Public Law 84-99 emergency operations authority.

The FOC will prepare a request for PL 84-99 emergency assistance for the Director's signature. If the Corps determines that the request meets the criteria of its legislative mandate, it will assume <u>total management</u> of all flood fight or emergency repairs for the incident in question.

3 RESPONSIBLE DWR UNITS

In the years following the 1995, 1997, and 1998 flood emergencies the Department has greatly expanded its flood emergency response organization. Many units now hold key cooperative flood preparedness and emergency response roles. This chapter briefly describes these units and how they support the Flood Operations Center during flood emergencies.

3.1 Emergency Response and Incident Command Teams

DWR has established SEMS-structured Emergency Response and Incident Command Teams to respond to emergencies throughout the Department.

In addition to standing Emergency Response Teams for the Flood Operations Center, the Eureka Flood Center, and Division of Engineering geotechnical specialists, several field Incident Command Teams have been established to respond to flood and other emergencies impacting the Department. They are listed below and are further described throughout the remainder of this chapter.

During flood emergencies the Department also furnishes DWR Representatives to the Governor's Office of Emergency Services Regional Emergency Operations Centers in Sacramento, Oakland, and Los Alamitos as necessary. The Flood Operations Center may provide representatives to county Operational Area Emergency Operations Centers per request by the county or its jurisdictional Regional Emergency Operations Center.

<u>Northern Region</u>
- Northern District
- Oroville Field Division
- Sutter Maintenance Yard

<u>Central Region</u>
- Division of Planning and Local Assistance (DPLA) Headquarters
- DPLA Central District
- Delta Levees Program
- Division of Operations and Maintenance
- Division of Engineering
- Delta Field Division
- Sacramento Maintenance Yard

<u>San Joaquin Region</u>
- San Luis Field Division
- San Joaquin District
- Southern Field Division
- Southern District

3.2 DWR Division of Flood Management

Certain key units within the Division have unique roles and provide key resources during flood emergencies and will be briefly reviewed here.

3.2.1 Emergency Response Section

This Section in the Flood Operations Branch is responsible for maintaining year-round operational readiness of the FOC including development and implementation of decision support system computer applications and a Geographical Information Systems Unit. The Section leads or assists with coordination and preparation of flood emergency response plans, procedures, and training courses. The Eureka Flood Center is also a part of the Emergency Response Section.

Section personnel provide year-round acquisition, analysis, and dissemination of water-related information to agencies, news media, and public. Personnel share FOC Duty Monitor responsibilities with the assistance of a telephone answering service to provide 24-hour response coverage for incoming emergency calls throughout the year. During Flood Alerts and Flood Mobilizations the Section fills many of the key positions in the FOC Planning / Intelligence Section.

3.2.2 Flood Project Inspection Section

This Section in the Flood Operations Branch inspects the maintenance procedures of levee maintaining agencies for levees and other flood control structures in federally constructed flood control projects located primarily in the Central Valley. They also manage the Department's flood fight methods training program, and provide technical support to the Reclamation Board on flood project encroachment enforcement actions and related matters.

During Flood Alerts and Flood Mobilizations, section personnel fill many of the key positions in the FOC Operations Section. Inspectors may be dispatched as Flood Fight Specialists or Initial Attack Incident Commanders to investigate reported flood incidents and to provide technical assistance. When dispatched to a flood incident they are frequently teamed with a geotechnical expert from the U.S. Army Corps of Engineers.

3.2.3 Forecasting Section

This Section in the Hydrology Branch is a component of the joint NWS/DWR river forecasting program. Personnel work with their counterparts in the NWS California-Nevada River Forecast Center to prepare river and reservoir inflow forecasts throughout the year, and to continuously develop and improve forecasting applications. From approximately mid-October through April they implement a 24-hour monitoring and duty schedule to respond to storms and to coordinate with other units responsible for flood management, water project, and emergency response operations.

3.2.4 California Data Exchange Center

A network of federal, State, local, and private gages measures climatic and hydrologic stream flow data throughout California. The California Data Exchange Center (CDEC) collects these data along with reservoir operations information. CDEC is used by the NWS California-Nevada River Forecast Center and by the Forecasting Section as the key source of information for producing joint river forecasts during flood season. These forecasts are available to local agencies through the CDEC web site and other automated computer information systems. Forecasts and other data and reports assist the coordinated operation of flood control facilities under the jurisdictions of the Department, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and local agencies.

3.2.5 Maintenance Yards

The Sutter Maintenance Yard and Sacramento Maintenance Yard maintain and operate flood control works of the Sacramento River Flood Control Project as defined in Sections 8361 and 12878 of the Water Code.

The Sutter Maintenance Yard is located seven miles west of Yuba City on State Highway 20. The yard is the headquarters for civil maintenance personnel who maintain portions of the Sacramento River Flood Control Project and other facilities in Butte, Colusa, Glenn, Lake, Sutter and Yuba counties.

The Sacramento Maintenance Yard is located on the east bank of the Sacramento River in Yolo County at Bryte Bend. The yard is the headquarters for civil maintenance personnel who maintain portions of the Sacramento River Flood Control Project facilities in Sacramento, Sutter, Solano, and Yolo counties.

During periods of high flows, personnel from both maintenance yards monitor and report on levee conditions, flood problems and river stages in their maintenance areas, and also provide other data to the FOC as needed. In a declared Flood Alert, the maintenance personnel continue regular maintenance and patrol State-maintained levees. Both yard offices maintain 24-hour telephone or radio communication with the FOC. If any State-maintained levee appears to require personnel for a flood fight beyond the capabilities of the regular crew, the yards notify the FOC. In this situation, a Flood Alert is declared and the flood fight is intensified under the overall direction of the Chief of the Flood Project Maintenance Branch and the immediate supervision of the maintenance facility superintendents.

3.3 Directorate

The Director, Chief Deputy Director, Deputy Directors, and the Emergency Preparedness Manager represent the Directorate during flood emergencies. They have ultimate responsibility for the Department's emergency response efforts. They serve as

liaison to and communicate with the Governor's office as well as other State and federal agencies involving Department policy issues.

3.3.1 Director

Responsibilities of the Director include:

- Issuing Flood Mobilization declarations
- Advising the Governor and staff on emergency conditions and their status
- Responding to the Governor's and Legislators' concerns and requests

3.3.2 Chief Deputy Director

Responsibilities of the Chief Deputy Director include:

- Acting as alternate for the Director during 24-hour rotational shifts
- Providing administrative liaison for the Deputy Directors, the Emergency Preparedness Manager, and the Division Chiefs
- Providing OES with complete and timely fiscal documentation

3.3.3 Deputy Directors

The Director or Chief Deputy Director may assign the following responsibilities to Deputy Directors:

- Acting as liaison between the Director, the Chief Deputy Director, the Division Chiefs, and the FOC and Emergency Response Team Directors
- Activating and assembling the Department Operations Center (DOC) staff and determining its location

3.3.4 Emergency Preparedness Manager

The Emergency Preparedness Manager normally assumes the role as the DOC Director. A division chief may be assigned by the Director or Deputy Director to act as a DOC Director if the Emergency Preparedness Manager is unavailable. The assistants to the Deputy Directors may also act as a DOC Director if the Emergency Preparedness Manager or chiefs are unavailable. The Emergency Preparedness Manager also designates DWR Agency Representatives for each OES Regional Emergency Operations Center. Refer to the *Department of Water Resources' Emergency Response Plan* on Department Operations Center's and their use in the Department.

3.3.5 Office of Water Education

The Office of Water Education (OWE) provides Information Officers who serve in the FOC Management Section. They may also be assigned to the Eureka Flood Center, to

other DWR Emergency Response Teams, and to DWR-established temporary Incident Command Posts.

Information Officers coordinate with the Planning / Intelligence Section to help insure the accuracy and timeliness of flood and emergency response information released to the public and news media. Information includes flood conditions, emergency response, levee-endangering incidents, river and weather forecasts, FOC activities, potential water supply and water quality impacts, and other flood-related issues.

The OWE Chief will also alert the Graphic Services Branch so that photographic and video documentation can be readily obtained.

3.4 Division of Planning and Local Assistance

The mission of the Division of Planning and Local Assistance (DPLA) is to manage California's water resources in cooperation with local, state, and federal agencies and all public interests - by collecting and analyzing accurate data; by planning for the best future water management actions; and by providing responsive technical and financial assistance. The four District offices in the Division carry out DWR's work within their boundaries and maintain close contact with local interests and agencies.

Because of their program responsibilities each of the four District Offices (Figures 3-1 through 3-5) have specific experience and knowledge of their geographical regions. Such experience and knowledge includes historical levee conditions and problem areas, environmental and local issues, hydrology, hydrodynamics, and geography.

Figure 3-1: Division of Planning and Local Assistance Districts

The Districts support and supplement flood emergency response activities in coordination with the FOC. The Districts have established SEMS-based Incident Command Teams to respond to any emergency at the District level, and to coordinate with and supplement the Department's overall emergency response.

Each District has appointed Flood Fight Coordinators who may serve as liaisons to the FOC providing status updates concerning related district flood fighting activities.

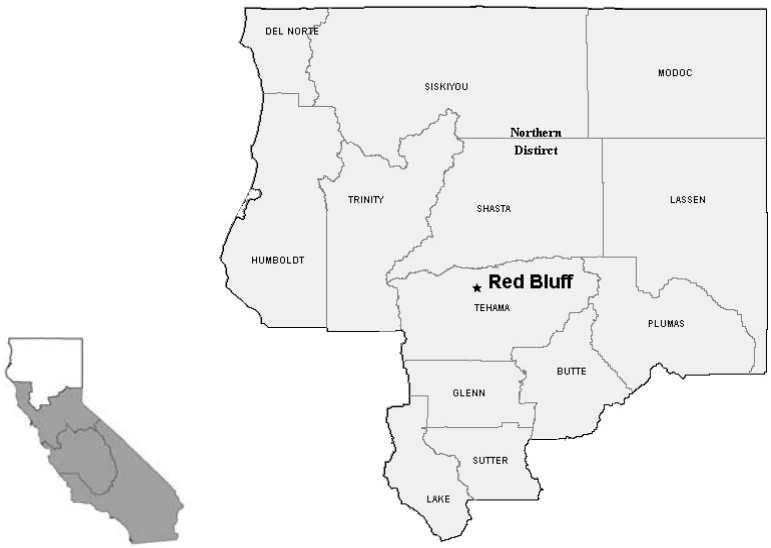
During flood emergencies the Coordinators and other team members may, at the request of the FOC, serve as primary or supplemental SEMS duty personnel at the FOC or other Emergency Operations Centers, and to establish and staff Incident Command Posts.

3.4.1 Northern District, Red Bluff

Northern District (Figure 3-2) is responsible for providing technical assistance, high water staking, surveying, agency representation, and stream gage operation and maintenance during flood emergencies. These responsibilities are carried out in coordination with the Flood Operations Center and in conformance with the Standardized Emergency Management System.

Northern District provides flood fight, geotechnical, and hydrologic technical assistance to operational areas, levee maintaining agencies, and local communities. The District also stakes high water marks and conducts surveys to document water surface elevations. Northern District also operates and maintains over 50 surface stream gaging stations. Many of these gages are California Data Exchange Center stations and are used by the Flood Operation Center to monitor and forecast river stages.

Figure 3-2: Northern District Jurisdiction



Northern District also serves as a supplemental personnel resource pool to develop an expanded emergency response organization at the Eureka Flood Center during extreme North Coast flood emergencies after the decision to activate the Center has been made by the Division of Flood Management. The *North Coast Emergency Response Plan* outlines this organization in detail.

3.4.2 Central District, Sacramento

Central District (Figure 3-3) provides technical assistance and personnel to Department units and local agencies for field investigations and to resolve emergency situations in its jurisdiction. District personnel have been trained in the Standardized Emergency Management System and provide expertise in flood plain management, geology, stream flow measurement, high water surveying and flood fighting. During flood emergencies the District will make high water stream flow measurements and will supervise flood fight crews.

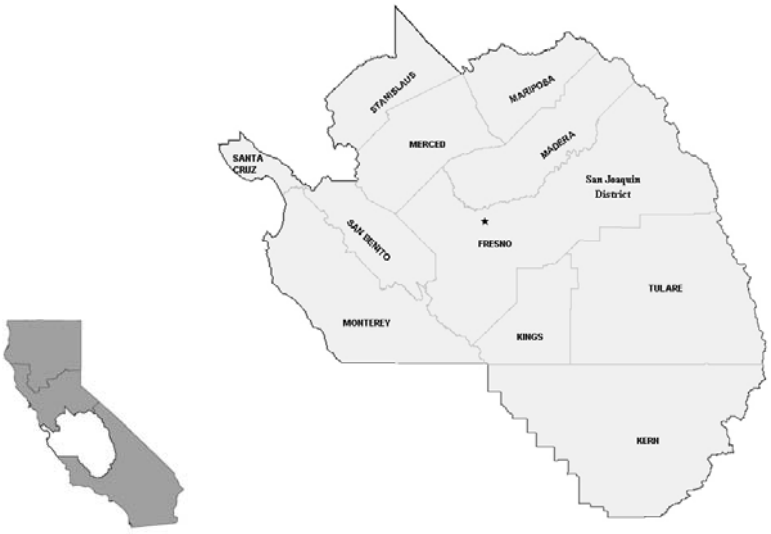
The District's emergency responsibilities and jurisdiction were recently modified with the formation of the Delta Levees Program as described in Section 3.5. The District provides local assistance and emergency response support to the counties shown in Figure 3-3 with the exception of those Sacramento – San Joaquin Delta lands now under the jurisdiction of the Delta Levees Program.

Figure 3-3: Central District Jurisdiction

3.4.3 San Joaquin District, Fresno

The San Joaquin District (Figure 3-4) provides DWR Agency Representatives to the Coastal OES Regional Emergency Operations Center (Oakland) and, when necessary, to eleven San Joaquin Valley and Central Coast counties. The District has an organized field Incident Command Team that is oriented toward emergency response duties in the San Joaquin Basin. As the majority of flood events in California do not involve the San Joaquin River basin, the team is also tasked with supporting flood response activities in other areas. The District is capable of activating an Emergency Operations Center when needed. District personnel have been trained in flood fighting and provide flood fight leaders and other specialists for field duty statewide.

Figure 3-4: San Joaquin District Jurisdiction



3.4.4 Southern District, Glendale

Southern District (Figure 3-5) represents the Department in twelve Southern California counties by providing assistance to local agencies on water matters, and conducting investigations and data collection. Southern District provides flood fight, geotechnical, and hydrologic technical assistance to operational areas, levee maintaining agencies, and local communities.

Figure 3-5: Southern District Jurisdiction

Due to organizational differences in the responsibilities of the Department and other agencies, Southern District follows special procedures under the Department's SEMS organization. The Southern District Chief directs all Department flood response efforts within the Southern District and is assisted by staff engineers, one of whom is designated as the Southern District flood fight coordinator. The District provides a DWR Agency Representative to the Southern OES Regional Emergency Operations Center in Los Alamitos when the REOC is activated during flood emergencies.

The flood fight coordinator will receive storm warnings from the National Weather Service on a 24-hour basis. If flooding appears imminent, the Southern District flood fight coordinator establishes liaison with federal, State, county, and city organizations engaged in flood fighting operations, keeps apprised of problems in all areas within the jurisdiction of the Southern District, and advises the Southern District Chief and the Flood Operations Center of flood conditions. Personnel are assigned from the District to maintain liaison with the USACE, the FOC, and the Office of Emergency Services. The Southern District Chief provides the FOC Director with the information necessary to keep the DWR Director fully informed of flood conditions and activities occurring in the Southern District.

3.5 Delta Levees Program

Formerly administered by Central District, the Delta Levees Program is now a component of the Office of State Water Project Planning.

Water Resources Engineering Memorandum #63, Levee-Endangering Incidents in the Delta, establishes protocols and procedures between the Delta Levees Program and DFM for managing flood threats in the Sacramento-San Joaquin Delta and describes how the Program may supplement DWR flood fighting efforts. Moreover, the draft *Flood Emergency Response Plan for the Sacramento-San Joaquin Delta, August 25, 1998*, describes how the Program may utilize an Emergency Operations Center to help coordinate response for the Delta.

The Delta Levees Program administers the Delta Levees Subventions (SB 541, 1973) and Special Flood Control Projects Programs (SB 34, 1988 and AB 360, 1996) that provide year round flood control assistance to local Delta districts for levee maintenance and improvement projects.

The Subventions Program is legislatively approved to provide $200,000 per year to Delta levee maintaining agencies in amounts not to exceed $50,000 per LMA for constructing emergency response projects.

Additionally the Special Flood Control Projects Program provides funds for emergencies and ongoing levee rehabilitation projects. Special Flood Control Projects has discretionary authority to supplement emergency projects not covered by the Subventions Program with the following levee maintaining agencies:

- Bethel Island Municipal Improvement District (Bethel Island)
- Reclamation District 341 (Sherman Island)
- Reclamation District 348 (New Hope Tract)
- Reclamation District 799 (Hotchkiss Tract)
- Reclamation District 830 (Jersey Island)
- Reclamation District 1601 (Twitchell Island)
- Reclamation District 2025 (Holland Tract)
- Reclamation District 2026 (Webb Tract)
- Reclamation District 2059 (Bradford Island)
- Town of Walnut Grove
- Town of Thornton

The Program also maintains four flood emergency supply and equipment storage depots. One is located at the Central District Headquarters in Sacramento, while the other three sites are located in the Sacramento- San Joaquin Delta at Twitchell Island, Brannan-Andrus State Park, and H.O. Banks Delta Pumping Plant. The Central District depot contains a majority of the District's flood fight equipment including chain saws, shovels, picks, rain gear, weed eaters, and safety equipment. The Delta depots maintain a supply of sand bags, geo-textile material, visquine plastic sheeting, buttons,

twine, and wooden stakes. The depots also serve as primary coordination areas for delivery of flood fighting supplies to various islands throughout the Delta.

3.6 Division of Engineering

Upon request of DFM the Division of Engineering (DOE) provides geotechnical inspection and technical assistance during flood emergencies. Inspectors are frequently paired with a partner from the U.S. Army Corps of Engineers to support PL 84-99 activities. DOE technical assistance supports flood fight, levee repair and construction, design review, construction contracts administration, and construction inspections.

3.7 Division of Management Services

The Departmental Services Office of the Division of Management Services (DMS) provides key personnel to the FOC to support the Logistics Section. The Logistics Section is responsible for all services and support needs including obtaining and maintaining facilities, personnel, equipment, and supplies for the FOC and all other DWR Emergency Response Teams and Incident Command Posts.

3.7.1 Facilities Management

Facilities Management personnel are assigned to the FOC to ensure adequacy of FOC facilities, those facilities of other DWR Emergency Response Teams, and to support temporary facilities acquired for Incident Command Posts.

3.7.2 Purchasing and Contract Services

Purchasing Services and Contract Services personnel are assigned to the FOC to procure, allocate, and coordinate delivery of supplies and materials.

3.7.3 Mobile Equipment

Mobile Equipment personnel are assigned to the FOC to acquire transportation resources and support the FOC. This may include securing transportation and equipment as needed for emergency response, transportation of work crews and materials to and from incident locations, and coordinating air reconnaissance missions.

All requests for automobiles, pickups, trucks, buses, tractors, cranes, loaders, scrapers, pumps, compressors, lighting plants, boats, and any other items needed during a flood emergency are first directed to the FOC where they are screened and directed as appropriate.

3.8 Division of Technology Services

The Network and Communications Support Office maintains both wide and local area networks, the DWR mobile radio system, and other communications equipment and facilities.

The Office procures additional cellular telephones and pagers to support staff assigned to the FOC and dispatched into the field as required. They may obtain radio equipment and assistance from the Department of General Services when necessary.

Radio traffic can be monitored from the FOC Telemetry Room or the audio-visual control station in the Flood Center. The Department's radio system consists of mobile units, base stations, mobile relays, and portable radios operating on the Department's assigned frequencies.

3.9 Division of Operations and Maintenance

When facilities of the State Water Project (Figure 3-6) are threatened by flooding the Division of Operations and Maintenance (O&M) coordinates activities at each incident with the FOC. Emergency Response Teams have been established in each Field Division to provide a SEMS-based emergency response organizational structure. Headquarters personnel may also be assigned to the FOC to provide technical expertise as required.

3.9.1 State Water Project Operations Control Office

The State Water Project (SWP) Operations Control Office and Operations Control Center (OCC) are also co-located at the Joint Operations Center on the third floor, next to the USBR Central Valley Operations Office. SWP personnel participate in daily operational briefings and are in constant coordination with FOC and joint forecasting personnel.

3.9.2 Field Divisions

Field Divisions respond to flood threats to their jurisdictional SWP facilities. Field Division personnel and equipment resources may be tasked to respond to flood incidents throughout the State if appropriate and available.

Figure 3-6: State Water Project Facilities and Field Divisions

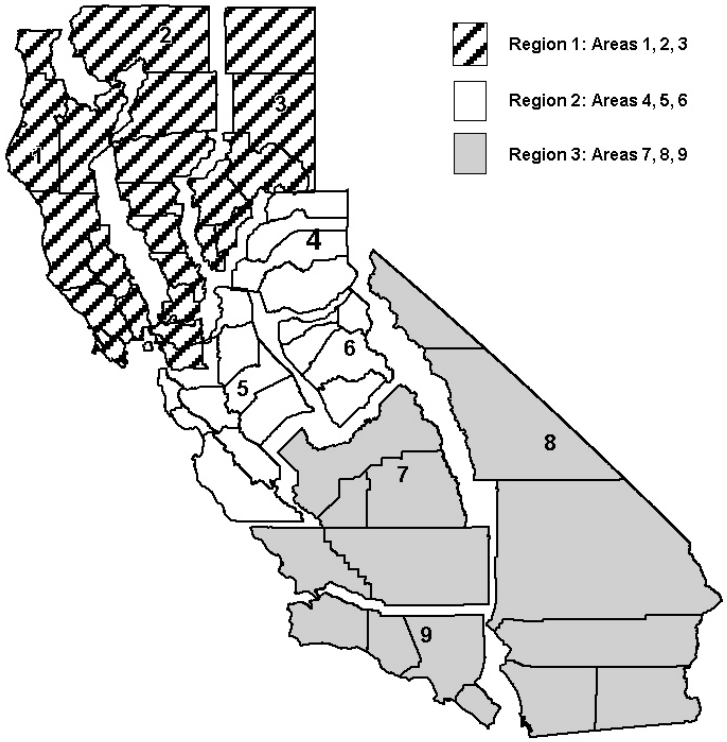
3.10 Division of Safety of Dams

The Division of Safety of Dams (DSOD) supervises the construction, alteration, maintenance and operation of non-federal dams that are 25 feet or higher and impound more than 15 acre-feet of water, and dams that are six feet or higher and impound more than 50 acre-feet of water. Figure 3-7 illustrates the regions and areas administered by DSOD.

DSOD and DFM Emergency Response Section personnel execute year-round protocols for responding to and following up on dam emergencies. All flood damages sustained by dams under the jurisdiction of DSOD are investigated and reported to the FOC.

DSOD personnel may be assigned to the FOC during flood emergencies to provide technical expertise as required.

Figure 3-7: Division of Safety of Dams Jurisdictions



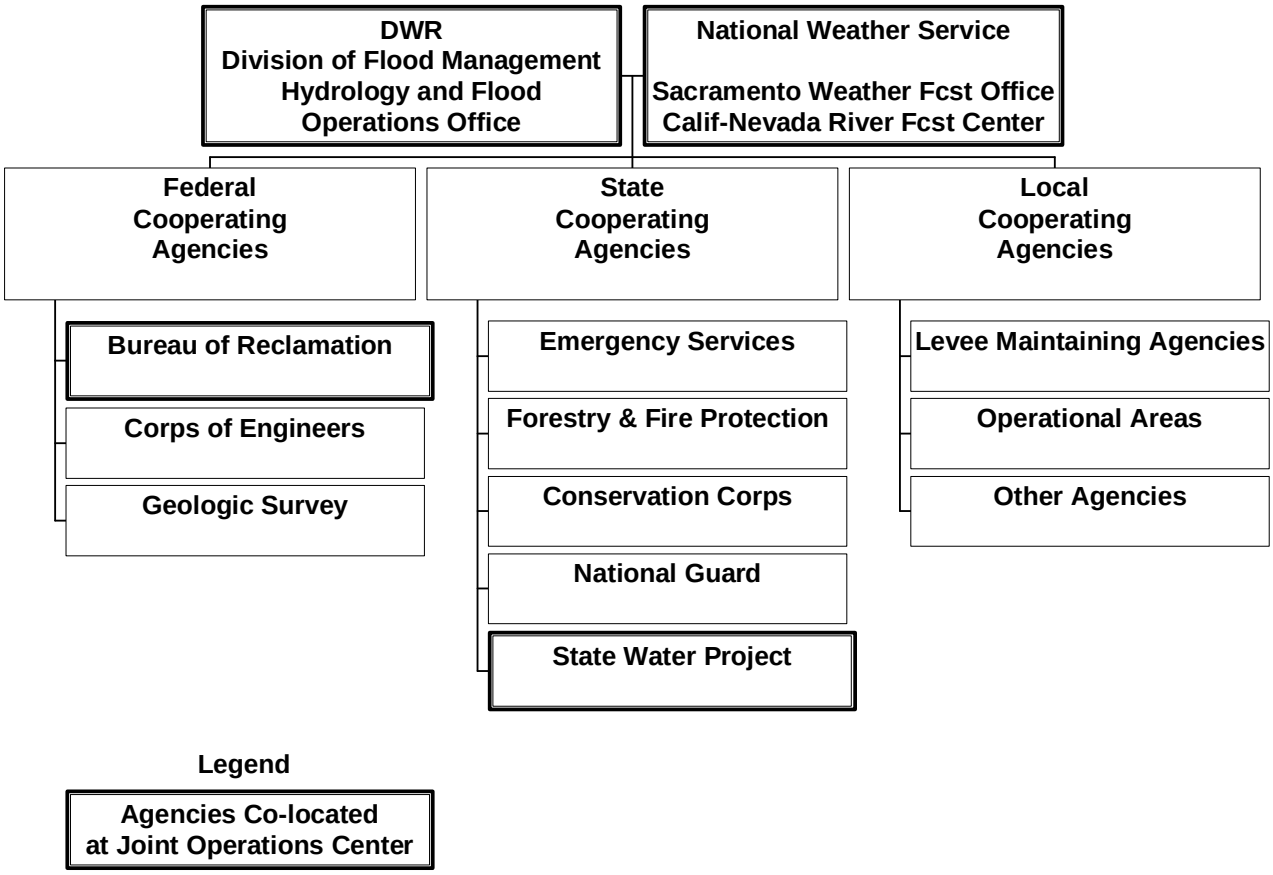
3.11 Division of Fiscal Services

The Division of Fiscal Services supports the FOC Finance / Administration Section. The Division supports post flood claims payments in coordination with the DFM Administrative Office.

4 COOPERATING AGENCIES

The Flood Operations Center cooperates with a number of federal, State, and local agencies during flood emergencies. Figure 4-1 displays key cooperating agencies that work together during flood emergencies and those agencies that are co-located at the Joint Operations Center.

Figure 4-1: Cooperating and Co-Located Agencies



4.1 Federal Agencies

4.1.1 National Weather Service

The mission of the NWS Hydrologic Services Program is to: (1) provide river and flood forecasts and warnings for the protection of lives and property, and (2) provide basic hydrologic forecast information for the nation's environmental and economic well-being. California is supported by ten Weather Forecast Offices (Figure 4-2) located in Medford (OR), Eureka, Reno and Las Vegas (NV), Sacramento, Monterey, Hanford, Oxnard, San Diego, Phoenix (AZ), and the California-Nevada River Forecast Center (CNRFC).

The CNRFC is one of thirteen River Forecast Centers (including Alaska) operated by the NWS throughout the country (Figure 4-3).

The NWS Sacramento Weather Forecast Office and CNRFC are co-located with the Flood Operations Center at the Joint Operations Center building in Sacramento.

Figure 4-2: National Weather Service
California Weather Forecast Office Jurisdictions

Figure 4-3: National Weather Service
River Forecast Center Jurisdictions

The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure that can be used by other governmental agencies, the private sector, the public, and the global community.

Doppler radar, satellite images, computer models, and other data are used to prepare a wide range of weather and hydrologic forecast products. A NEXRAD Doppler radar facility located about 15 miles southwest of Sacramento near Davis tracks storms as they move across the Sacramento Valley. The radar network covering California also includes facilities near Eureka, Monterey, Hanford, Ojai, San Diego, Santa Ana, Edwards AFB, Vandenberg AFB, and Beale AFB, near Yuma, AZ, Las Vegas and Reno, NV, and Medford, OR.

NWS Weather Forecast Offices operate on a 24-hour basis year-round. The CNRFC works a 6 a.m. to 6 p.m. schedule and expands to a 24-hour schedule when emergency high water conditions exist or are anticipated. The CNRFC issues joint river forecasts in cooperation with the DFM Hydrology Branch for main stem rivers in California. Forecasts are disseminated through NWS automated systems, the California Data Exchange Center, and directly from the Flood Operations Center.

The NWS also issues Flash Flood Watches and Warnings, Urban and Small Stream Flooding Advisories, and other hydrologic products independently of the FOC. Comprehensive listings of NWS products for California can be found at the following NWS Internet web sites:

- Eureka: http://www.wrh.noaa.gov/Eureka
- Hanford: http://www.wrh.noaa.gov/Hanford
- Las Vegas, NV: http://www.wrh.noaa.gov/Lasvegas/index.shtml
- Los Angeles / Oxnard: http://www.nwsla.noaa.gov/
- Medford, OR: http://www.wrh.noaa.gov/Medford
- Phoenix, AZ: http://www.phx.noaa.gov/
- Reno, NV: http://www.wrh.noaa.gov/Reno
- Sacramento: http://www.wrh.noaa.gov/sacramento
- San Diego: http://www.wrh.noaa.gov/Sandiego/index.shtml
- San Francisco Bay Area / Monterey: http://www.wrh.noaa.gov/Monterey

- California-Nevada River Forecast Center: http://www.wrh.noaa.gov/cnrfc/

4.1.2 U.S. Army Corps of Engineers

The Corps' South Pacific Division has three Districts (Figure 4-4) with jurisdiction in California. District Offices are located in Sacramento, San Francisco, and Los Angeles, with the Division headquartered in San Francisco.

Figure 4-4: USACE South Pacific Division Jurisdictions

The Corps has jurisdiction over the flood control operations of reservoirs having federal flood control reservations space. These reservoirs are shown on Table 4-2.

The Corps provides federal assistance under Public Law 84-99 when required levels of flood fighting exceed State and local resources to adequately respond.

Levee maintaining agencies (local and State) maintain and operate levees of the Sacramento River Flood Control Project or other projects of the Corps. The Reclamation Board, as "local sponsor," has provided assurances to the Corps that these federal projects will be properly maintained and operated. In turn, the levee maintaining agencies have agreed to maintain and operate their portions of the projects, subject to monitoring by The Reclamation Board. Department personnel from the Flood Project Inspection Section inspect maintenance of federal levees and report to the Corps.

During a flood alert the Corps has two additional tasks:

- To provide local authorities the benefit of the Corps' flood fighting experience.
- To answer requests for assistance in flood fighting received through DWR.

An updated Memorandum of Understanding (MOU) between the Department and the Corps' South Pacific Division was executed in 1999. The purpose of the MOU is to facilitate working relationships between all parties and to provide a better understanding of responsibilities of each party in relation to flood emergency actions authorized under Public Law 84-99. The MOU updated the January 1984 MOU, which had amended the original MOU of 1956. The updated MOU also incorporated new procedures as a result of the Standardized Emergency Management System. *Standard Operating Procedures*

for Responding to Flood Emergencies Under Public Law 84-99 were also written and are incorporated into the MOU.

Assistance from the U.S. Army (other than the Corps) may consist of personnel, equipment, and supplies for flood fighting, rescue, and relief work. Such assistance may be sought when local and State facilities are deemed unable to prevent extensive loss of life or property. Requests for U.S. Army assistance in flood fighting must be made to the Corps through the Department.

4.1.3 U.S. Bureau of Reclamation

The Bureau of Reclamation (USBR) operates Central Valley Project reservoirs for irrigation, water supply, hydropower, recreation, environmental needs, and flood control. These reservoirs are shown on Table 4-2.

In some cases, portions of other projects under the jurisdiction of the USBR may be operated for flood control if their safety is not jeopardized and their lawful function not interrupted.

Table 4-2: Flood Control Reservoir Operating Agencies

U.S. Bureau of Reclamation				
Stream	*Release Point*	*Upstream Impoundment*	*Forecast Bulletin*	*CDEC ID*
Trinity River	Lewiston Dam	Trinity Lake	North Coast	LEW
Clear Creek	Whiskeytown Lake	Trinity Lake System	North Coast	WHI
Sacramento River	Keswick Dam	Shasta Lake	Upper Sacramento	KES
American River	Nimbus Dam	Folsom Lake	Lower Sacramento	NAT
Stanislaus River	Goodwin Dam	New Melones Lake	San Joaquin	GDW
San Joaquin River	Friant Dam	Millerton Lake	San Joaquin	MIL
U.S. Army Corps of Engineers				
Stream	*Release Point*	*Upstream Impoundment*	*Forecast Bulletin*	*CDEC ID*
Stony Creek	Black Butte Dam	Black Butte Lake	Upper Sacramento	BLB
Yuba River	Englebright Dam	New Bullards Bar Reservoir (NF)	Lower Sacramento	ENG
East Fork Russian River	Mendocino Dam	Coyote Valley Reservoir	Russian/Napa	COY
North Fork Cache Creek	Indian Valley Dam	Indian Valley Reservoir	Lower Sacramento	INV
Dry Creek	Warm Springs Dam	Lake Sonoma	Russian/Napa	WRS
Calaveras River	New Hogan Dam	New Hogan Lake	San Joaquin	NHG
Littlejohns Creek	Farmington Dam	Farmington Flood Control Basin	San Joaquin	FRM
Chowchilla River	Buchanan Dam	Eastman Lake	San Joaquin	BUC
Fresno River	Hidden Dam	Hensley Lake	San Joaquin	HID
Kings River	Pine Flat Dam	Pine Flat Lake	San Joaquin	PNF
Kaweah River	Terminus Dam	Lake Kaweah	*Not forecast*	TRM
Tule River	Success Dam	Lake Success	*Not forecast*	SCC
Kern River	Isabella Dam	Lake Isabella	*Not forecast*	ISB
California State Water Project				
Stream	*Release Point*	*Upstream Impoundment*	*Forecast Bulletin*	*CDEC ID*
Feather River	Oroville Dam	Oroville Lake	Lower Sacramento	ORO
South Sutter Irrigation District				
Stream	*Release Point*	*Upstream Impoundment*	*Forecast Bulletin*	*CDEC ID*
Bear River	Camp Far West Dam	Camp Far West Lake	Lower Sacramento	CFW
Turlock Irrigation District				
Stream	*Release Point*	*Upstream Impoundment*	*Forecast Bulletin*	*CDEC ID*
Tuolomne River	La Grange Dam	Don Pedro Lake	San Joaquin	LGR
Merced Irrigation District				
Stream	*Release Point*	Upstream Impoundment	Forecast Bulletin	*CDEC ID*
Merced River	Lake McSwain	Lake McClure	San Joaquin	MCS
East Bay Municipal Utility District				
Stream	*Release Point*	*Upstream Impoundment*	*Forecast Bulletin*	*CDEC ID*
Mokelumne River	Camanche Dam	Camanche Lake	San Joaquin	CMN

4.1.4 U.S. Geological Survey

The U.S. Geological Survey (USGS) participates in flood emergencies by collecting and sharing streamflow data collected in numerous locations in the State. The USGS cooperates with the Department and NWS in establishing telemetered stream gages necessary for flood operations. During flood events USGS personnel make flow measurements and emergency repairs to equipment at their gaging stations.

4.1.5 Federal Emergency Management Agency

The President of the United States is authorized under the Disaster Relief Act of 1974 -- Public Law 93-288 to provide federal disaster assistance to State and local governments and individuals upon request of the Governor. The Administrator of the Federal Emergency Management Agency (FEMA) exercises the authority to provide most of this assistance. FEMA coordinates the disaster relief functions of all federal agencies during a presidential declaration of emergency or major disaster.

All local and state requests for assistance must be made through the Governor's Office of Emergency Services to FEMA's Region IX Office in San Francisco in conformance with guidelines in *The New Public Assistance Program Orientation Manual, November 1998*.

4.2 State Agencies

4.2.1 Governor's Office of Emergency Services

The Governor's Office of Emergency Services (OES) coordinates the civil defense efforts of federal, State and local agencies during periods of disaster or emergency. OES also maintains a representative with the Flood Operations Center during all flood emergencies.

With its headquarters in Sacramento, OES is comprised of three Administrative Regions – Inland, Coastal, and Southern which are located in Sacramento, Oakland, and Los Alamitos, respectively. The regions manage and coordinate information and allocate resources among operational areas within Mutual Aid Regions pursuant *to Government Code Section 8600*, and between the operational areas and State agencies for support during emergency mitigation, preparedness, response, and recovery.

OES helps local governments organize emergency plans. Local governments assist each other during disaster periods under mutual aid pacts established by OES. Mutual aid begins on the local level and is organized on a county and regional basis.

Figure 4-5 shows the three State-level OES Regions and their county-level county Operational Areas (OA's). Each region operates a Regional Emergency Operations Center (REOC) – Inland Region in Sacramento, Coastal Region in Oakland, and Southern Region in Los Alamitos.

Figure 4-5: OES Administrative and Mutual Aid Regions

4.2.2 California Department of Forestry and Fire Protection

The Department of Forestry and Fire Protection (CDF) provide personnel for flood fight crews and levee patrols during emergency situations. The Governor's Office of Emergency Services will task CDF to provide these resources when necessary. DWR no longer orders crews directly from CDF, however DWR and CDF are drafting a reciprocal agreement that once signed by both parties will allow for direct ordering of resources. Standby crews are frequently stationed near sites where problems are anticipated due to storm activity, high river stages, high tides or heavy reservoir releases.

4.2.3 California Conservation Corps

The FOC depends heavily upon the Conservation Corps (CCC) to provide personnel for flood fight crews and levee patrols during emergency situations. Standby crews are frequently stationed near sites where problems are anticipated due to storm activity, high river stages, high tides or heavy reservoir releases. Figure 4-6 shows the jurisdictions of the eleven CCC Service Districts.

Figure 4-6: CCC Service Districts

4.2.4 California National Guard

The California National Guard (CNG) functions as a reserve force for the national armed forces. CNG also provides emergency manpower, equipment and transportation resources during local disasters or disorder.

4.2.5 California Highway Patrol

The California Highway Patrol (CHP) is responsible for traffic control during all emergencies. Also, State and federal organizations engaged in flood emergencies may use Highway Patrol communication facilities.

4.3 Local Agencies

The FOC cooperates with a number of local agencies during flood emergencies. Many of these agencies are listed in the *Directory of Flood Officials* updated annually.

During a Flood Alert the Department may provide technical assistance to advise local agencies about how to establish levee patrols, establish flood fight operations, investigate specific flood incidents, and coordinate requests for emergency assistance.

4.3.1 Levee Maintaining Agencies

Section 8370 and 12642 of the Water Code provide that it is the responsibility and duty of local districts, counties, cities and other public agencies to maintain and operate the works of the Sacramento River Flood Control Project and the San Joaquin River Flood Control Systems, as well as other federal projects within their boundaries. These local maintaining agencies are also responsible for patrolling and protecting those levees during high water periods. Section 8361 names the Sacramento River Flood Control Project units maintained and operated by the State.

Local agencies have primary responsibility for levee maintenance and flood fighting. Levee maintaining agencies include levee and reclamation districts, other special districts, local government agencies, and private levee owners. Collectively, these agencies are referred to as Levee Maintaining Agencies (LMA).

An overview of the relationship between levee maintaining agencies, the Department, and the U.S. Army Corps of Engineers with respect to emergency assistance under Public Law 84-99 is detailed earlier in Section 2.7.

4.3.2 County Operational Areas

Operational areas encompass the cities and other public agencies within a county's geographical area. California's 58 operational areas provide coordination between local jurisdictions and OES Administrative Regions. Coordination between the operational area and local government is accomplished through the Operational Area Emergency Operations Center.

Emergency services or civil defense offices have been established in each county and major city in the State. A local office can assist local public agencies by obtaining equipment and materials needed for a flood emergency.

4.3.3 Law Enforcement

During emergencies sheriff, police, fire, and other local law enforcement agencies conduct key operations within their local emergency response organization. All evacuations and law enforcement actions are coordinated within the operational area

organization. Sheriff offices are often designated as contacts for High Water Notification Calls as rivers are rising.

4.4 Disaster Assistance Organizations

Disaster assistance organizations may lawfully help local government agencies in evacuating, housing and feeding persons in flood-threatened or flooded areas. Typically these organizations coordinate with the Care and Shelter Unit of the local government emergency response organization. Two major disaster assistance organizations are the American Red Cross and the Salvation Army.

4.4.1 American Red Cross

The American Red Cross provides assistance for food, clothing, shelter and supplemental medical needs to disaster victims. The Red Cross provides emergency mass care and individual/family assistance. Upon the request of government, and resources permitting, the Red Cross may assist with warnings, rescues or evacuations.

4.4.2 Salvation Army

During an emergency, the Salvation Army may be called upon to provide food, clothing, furniture and housing, emergency communication, mobile canteen service, and spiritual ministry for disaster victims.

5 STANDARDIZED EMERGENCY MANAGEMENT SYSTEM

Senate Bill 1841 established the Standardized Emergency Management System (SEMS) in 1992, adding *Section 8607* of the *Government Code* in response to the 1991 East Bay Hills Fire. The intent of this law was to improve the coordination of State and local emergency response.

All State agencies were required to incorporate SEMS by December 1, 1996, and are required to use SEMS when responding to emergencies involving multiple jurisdictions or agencies. SEMS was implemented at the Flood Operations Center and used to establish other DWR Emergency Response Teams.

SEMS is designed to standardize response to emergencies involving multiple jurisdictions or multiple agencies. SEMS is flexible and adaptable to the needs of all emergency responders in California. SEMS requires emergency response agencies to use basic principles and components of emergency management, and includes the Incident Command System (ICS), mutual aid, multi/inter-agency coordination, and the operational area concept.

5.1 Organizational Levels

SEMS has five organizational levels of emergency response organization activated as needed to provide effective response to multi-agency and multi-jurisdictional emergencies. The five levels are field, local government, operational area, regional, and State:

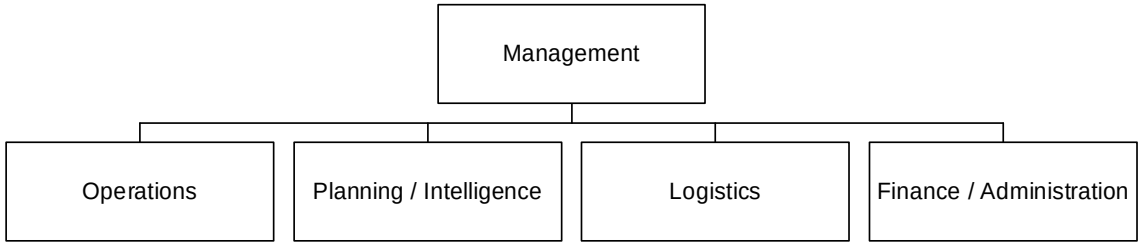
- **Field Response Level** - The field response level commands emergency response personnel and resources to carry out tactical decisions and activities in direct response to an incident or threat.
- **Local Government Level** - The local government level manages and coordinates the overall emergency response and recovery activities within its jurisdiction. This level includes cities, local agencies, and special districts.
- **Operational Area Level** - The operational area level manages and/or coordinates information, resources, and priorities among local governments, and serves as the coordination and communication link between the local government level and the regional level. This level includes all the jurisdictions and special districts within the county geographical area.
- **Regional Level** - The regional level manages and coordinates information and resources among operational areas within the mutual aid region and between operational areas and the state. This level coordinates overall state agency support for emergency response activities.
- **State Level** - The state level manages state resources in response to the emergency needs of the other levels, manages and coordinates mutual aid among the mutual aid regions and between the regional and state levels, and serves as the coordination and communication link with federal disaster agencies.

5.2 Functions

SEMS provides a common framework for setting priorities, interagency cooperation, and efficient flow of resources and information. The five functions of a SEMS organization are described as follows and are depicted in Figure 5-1 below.

- **Management** - develops overall emergency policy and sets goals and priorities. Ensures overall coordination between SEMS functions and manages public information.
- **Operations** - implements the priorities established by Management.
- **Planning / Intelligence** – performs short, medium, and long range planning, prepares Incident Action Plans and Situation Reports, collects, evaluates, and disseminates information, maintains and archives documentation, and projects future resource needs.
- **Logistics** – provides facilities, services, personnel, equipment, and materials to support emergency operations, and tracks resource status.
- **Finance / Administration** – responsible for all financial and cost analysis aspects of all emergency operations, and for any administrative tasks not assigned to the other functions.

Figure 5-1: FOC SEMS Structure



Staffing levels and extent of response depend on the nature and extent of the emergency. The flexibility of the system's organizational structure is such that it can adapt to any emergency or incident that warrants an emergency response. The system is applicable and acceptable to all user agencies and is readily adaptable to new technology. The system expands in a rapid and logical manner from an initial response to a major incident and contracts just as rapidly as organizational needs or the situations decrease.

5.3 Components

The main components of SEMS are:

- **Common Terminology** – The established common titles for organizational functions, resources, and facilities within SEMS.
- **Modular Organization** – The method by which the SEMS organizational structure develops based upon the type and size of an incident. Modular organization allows

its users to adopt an integrated organizational structure equal to the complexity and demands of an incident by expanding or contracting, as the incident requires.

- **Incident Action Plans** – Identify objectives and determine strategy. The EOC Director makes plans for the incident based upon the requirements of the affected jurisdiction(s). The plans for an incident document the tactical and support activities required for the operational period.
- **Span of Control** – Span of control within SEMS is managed by limiting the number of emergency response personnel who can effectively be supervised or directed by an individual supervisor. The number of incidents, nature of the response or task, distance, and safety issues will influence the span of control range. The desired span of control range is between three and seven personnel.
- **Pre-Designated Resources** – The need for pre-designated resources is identified within SEMS. The determination of the types and experience levels of trained permanent and supplemental personnel, permanent or temporary building facilities, equipment, supplies, and personnel support based upon the mission of the EOC.
- **Comprehensive Resource Management** – The identification, grouping, assignment and tracking of resources.

5.4 Incident Command System

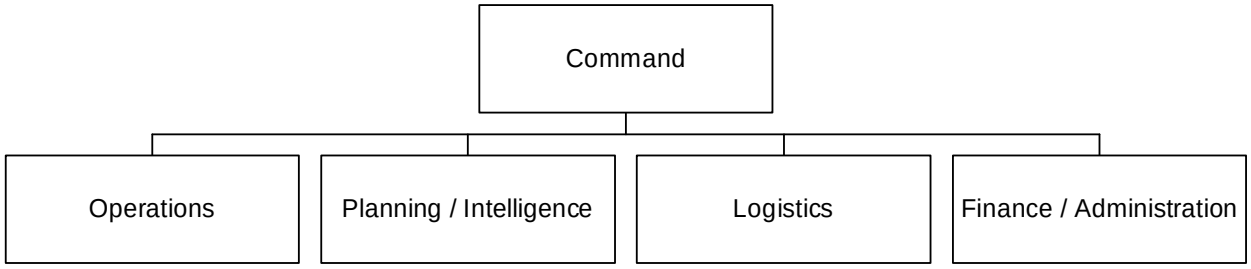
The development of SEMS was based on the Incident Command System (ICS). ICS is a nationally used standardized on-scene emergency management concept specifically designed to allow its users to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, with responsibility for the management of resources to effectively accomplish stated objectives pertinent to an incident.

The five functions of an ICS organization are similar to those in SEMS, with the most obvious difference being the functional title change from Management to Command. It is easy to remember that SEMS is used at Emergency Operations Centers and the FOC while the Incident Command System in used in field operations. The five functions of an ICS organization are described as follows and are depicted in Figure 5-2.

- **Command** – responsible for directing, ordering, and/or controlling resources by virtue of explicit legal, agency, or delegated authority.
- **Operations** – responsible for coordinated tactical response of all field operations directly applicable to or in support of the mission(s) in accordance with the Incident Action Plan.
- **Planning / Intelligence** – performs short, medium, and long range planning, prepares Incident Action Plans and Situation Reports, collects, evaluates, and disseminates information about the development of the incident, maintains documentation, and projects future resource needs.
- **Logistics** – provides facilities, services, personnel, equipment, and materials to support the incident and track resource status.

- **Finance** – responsible for all financial and cost analysis aspects of the incident, and for any administrative tasks not assigned to the other functions.

Figure 5-2: DWR Incident Command Structure



Prior to the development of SEMS the Department adapted the ICS and created a system called DWR/ICS in the late 1980's for use in flood emergencies. The Division of Flood Management wrote several publications to train personnel and support ICS field operations. These publications are being updated to reflect the implementation of SEMS. They are listed here and in Appendix B.

- *Incident Command System, Field Operations Guide, DWR/ICS 420-1, Sept. 1989.*
- *Operational Description, DWR/ICS 120-1, Oct. 1989.*
- *Guidelines for the Flood Fight Specialist and Initial Attack Incident Commander, (Draft) June 1998.*

6 EMERGENCY OPERATIONS CENTERS

Emergency Operations Centers (EOC) are centralized facilities where emergency operations can be directed and coordinated. EOCs are typically established at pre-determined locations in permanent facilities. SEMS allows for EOCs to be established at four levels of government in California: local, operational area, regional, and State.

6.1 Local Government Level

Local municipalities, single or multiple agencies, and special districts commonly activate EOCs to deal with emergencies within their jurisdictions. EOC managers will activate their EOC to manage and coordinate resources to support Incident Command and/or overall emergency response within their jurisdictional boundaries. These EOCs will also coordinate with their operational area when required.

6.2 Operational Area Level

Operational Areas (OAs) are organized along County geographical boundaries. The OA EOC is activated to manage and/or coordinate information, resources, and priorities among local governments within the OA, and serves as the coordination and communication link between the local government level and the regional level. SEMS requires the activation of the operational area if one or more jurisdictions have activated their EOCs, request the activation of the operational area, or have proclaimed a local emergency.

If an OA EOC is activated the Governor's Office of Emergency Services (OES) and/or DWR may provide a representative to the extent possible for coordination of emergency operations and flood fight operations respectively.

6.3 Regional Level

OES operates three Regional Emergency Operations Centers (REOCs) in California, which are located in Sacramento (Inland Region), Oakland (Coastal Region) and Los Alamitos (Southern Region). Each REOC supports and coordinates OES functions within mutual aid regions.

If an OA EOC is activated the jurisdictional REOC will be activated to coordinate emergency operations and respond to requests for resources and mutual aid. The REOC will coordinate information and resources between OAs and provide a point of liaison to Federal agencies, including the U.S. Army Corps of Engineers through the DWR representative at the REOC. DWR will provide a representative to each activated REOC to assist in coordination of flood fight activities.

6.4 State Level

When a REOC is activated the OES State Operations Center (SOC) will be activated to support the region(s) with state agency resources, i.e., California Department of Forestry and Fire Protection, California Conservation Corps, California National Guard, etc., and to coordinate statewide mutual aid and federal aid.

In addition to the SOC other State agencies involved in emergency response activities may operate Department Operations Centers (DOC). The Flood Operations Center is an example of a State-level EOC and is not normally referred to as a DOC. DWR may establish a DOC at the Resources Building so that Executive management may oversee the overall DWR response to an emergency, particularly when multiple Emergency Response Teams are activated in addition to the FOC.

Some typical functions of a DWR DOC could include:

- Ensure that the FOC and Emergency Response Teams are properly staffed and supplied.
- Ensure communications with and between the FOC, other EOCs, and Emergency Response Teams.
- Assist with coordination of resource requests.
- Ensure that the Director and Deputy Directors are informed of key issues and decisions.
- Provide liaison personnel to the State OES SOC and REOCs upon request.

6.5 Hierarchy of Coordination and Assistance

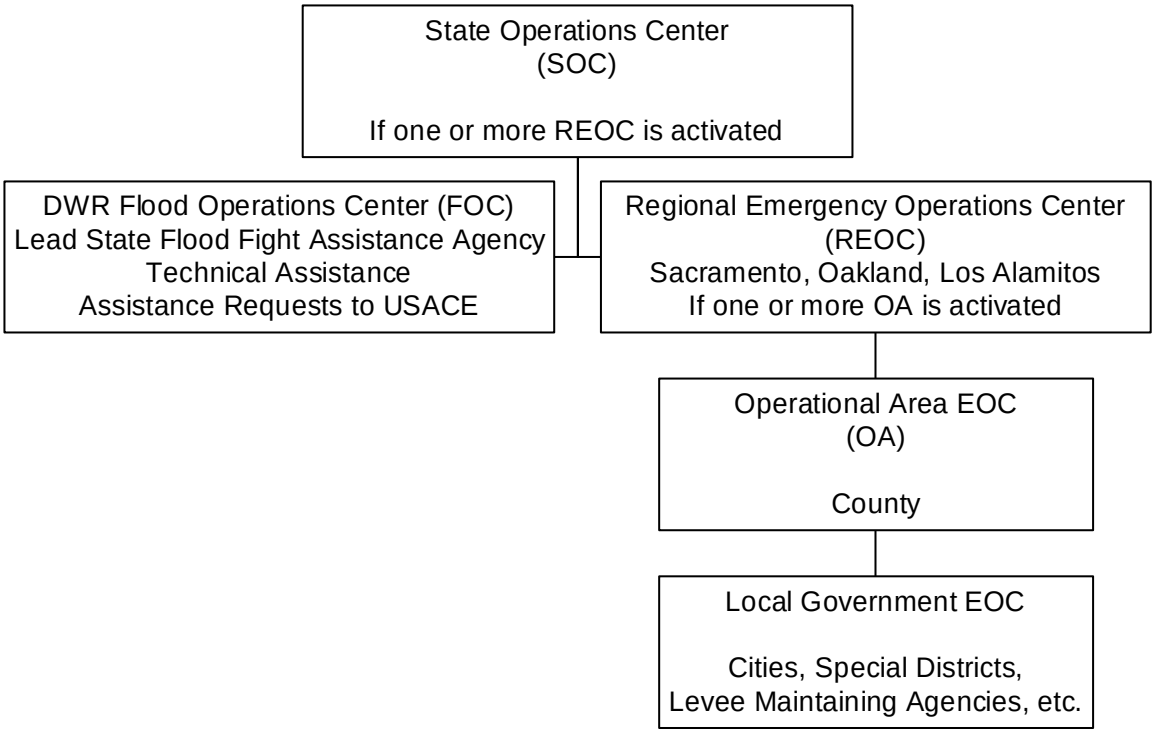
In all circumstances the resources necessary to continue a flood fight and protect lives and property will be requested and coordinated through the SEMS system. In addition, each level of SEMS is responsible for keeping the next level informed of essential information regarding the development and status of the flood fight.

LMAs are expected to stockpile flood fight resources prior to the flood season. If an LMA exhausts and can’t obtain additional flood resources they should request additional resources from their local jurisdiction.

If a city or county can’t provide the needed resources, they should request assistance from the operational area. The OA will provide flood-fighting resources to the LMA, to the extent possible, from within the OA, i.e., from county, cities and special districts.

In the event the OA cannot adequately support the flood fight, mutual aid resources within the corresponding Mutual Aid Region, and then state resources (including assistance from DWR through the Flood Operations Center) shall be requested through the Regional Operations Center (REOC). OES through the REOC may task a state agency to provide the resources to the OA. Figure 6-1 illustrates the SEMS hierarchy.

Figure 6-1: SEMS EOC Hierarchy



6.6 Keys to EOC Readiness and Effectiveness

- An EOC should be able to be activated within a few hours.
- 24-hour operations should be sustainable under power failure and other common outages and normal work interruptions.
- A backup EOC must be available in the event the primary location is unserviceable due to disaster, contamination, or other usual circumstances. The Flood Operations Center backup plan is described in the Hydrology and Flood Operations Branches Recovery Action Plan, a section of the DWR Business Resumption Plan.
- Personnel must be adequately trained.
- Flood exercises and other simulations must be held to train personnel and test information and other systems.
- Emergency plans, operating procedures, forms, and checklists must be current and available.
- A standardized, clearly understood emergency management system (i.e., SEMS) must be used.

7 FLOOD OPERATIONS CENTER ORGANIZATION

This chapter outlines the SEMS organization implemented at the Flood Operations Center, includes an organization chart for each of the five SEMS sections, and briefly describes the key responsibilities of duty personnel. Expanded functional descriptions, responsibilities, and checklists for duty personnel are published under separate cover.

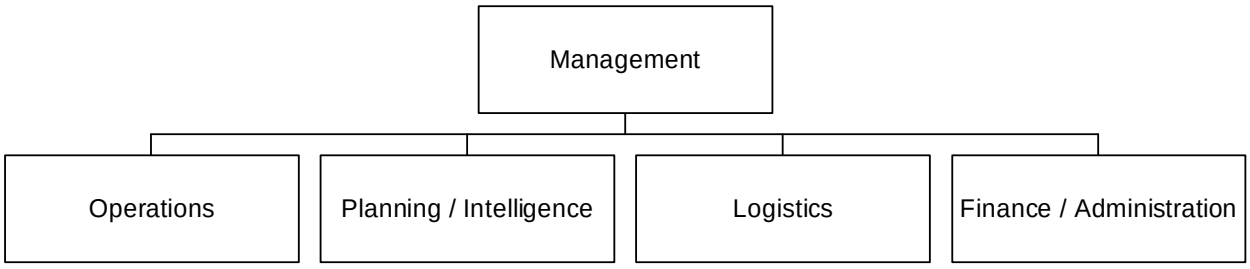
7.1 FOC Organization

When activated the five primary FOC functions (Figure 7-1) are established as separate "sections" of the FOC organization. All five functions must be present regardless of the level of assigned personnel or magnitude of emergency response. Within each section there may be several sub-functions that are normally established as units.

The determination of the appropriate level of staffing to manage the function is the responsibility of the FOC Director and the other four Section Chiefs. In general the following conditions will apply:

- Staff each section with the most qualified person in the discipline most closely aligned to the emergency.
- Maintain a span of control not to exceed one supervisor for up to seven sub-functions.
- One person may have delegated authority for more than one area of responsibility. Usually this is done during the early portion of the Activation Phase or in the Demobilization Phase.
- Each of the five functional areas can be expanded or contracted as needed into more or fewer organizational units.
- If one of the other four sections is not activated the FOC Director will perform its duties.

Figure 7-1: FOC Organization



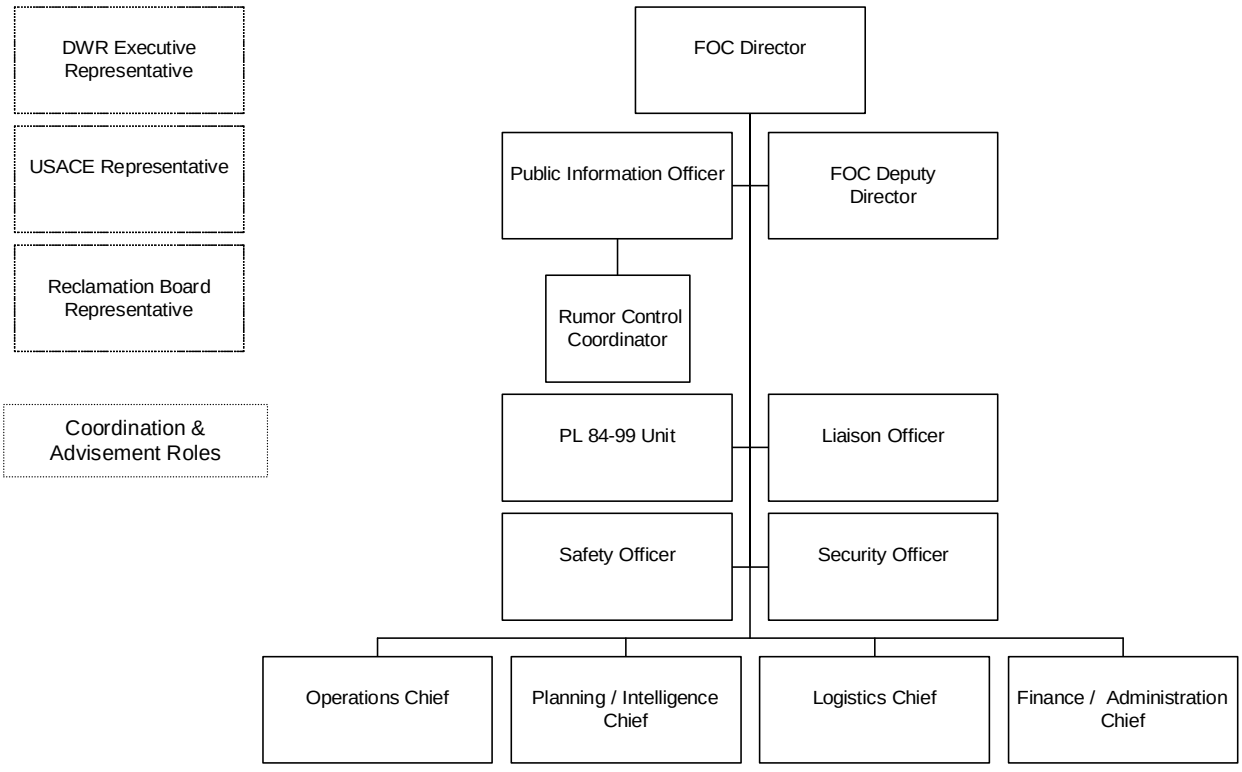
7.2 Management Section

The FOC Director may have support personnel called the Management Staff. They are delegated responsibility to perform management support functions. Management Staff positions (Figure 7-2) will vary depending upon the need of the Director for support. The positions described below are the more common Management Staff positions.

The Management Staff positions are important in that they relieve the Director of many activities that may interfere with the Director's primary responsibility for FOC management.

Note that these positions may be activated at a one-person level, or at a unit level depending upon the level of activation, the work to be accomplished, and the numbers of personnel needed.

Figure 7-2: FOC Management Section Organization



7.2.1 FOC Director

The Division of Flood Management's Flood Operations Branch Chief usually fills the position of FOC Director. In cooperation with the DFM Division Chief and the Executive Division, the Director has the authority and responsibility for the operations of the FOC.

The title Incident Commander should not be used to refer to a person in charge of the FOC. This term is reserved for use at the SEMS Field level.

The FOC Director will delegate authority as appropriate and necessary to members of the Management Staff and to the Chiefs of the Operations Section, Planning / Intelligence Section, Logistics Section, and Finance / Administration Section.

Primary responsibilities of the Director include:

- Establish appropriate staffing levels and continuously monitors organizational effectiveness to ensure that modifications occur as required.
- Exercise overall management responsibility for the coordination between emergency response agencies.
- In conjunction with the Section Chiefs set priorities for response efforts and ensure that all DWR actions are accomplished within the priorities established at the FOC.
- Ensure that interagency coordination is accomplished effectively.
- In the event of the loss of the Joint Operations Center inform field Incident Commanders and other activated Emergency Response Teams of the Flood Operations Center's relocation to the backup site.

7.2.2 Deputy FOC Director

A Deputy FOC Director assists the Director and may serve in any capacity as designated to maintain span of control and share the duties of the FOC Director. The Deputy should be able to serve as an advisor to the Director and Section Chiefs as needed, providing information and guidance related to the internal functions of the FOC and to ensure compliance with emergency plans and procedures.

7.2.3 PL 84-99 Unit

This Unit coordinates and process all PL 84-99 emergency assistance requests, evaluations, and communications between local agencies, county operational areas, the U.S. Army Corps of Engineers, and the Department. They work closely with the U.S. Army Corps of Engineers Representative and the FOC Director and Deputy to carry out much of the processing on PL 84-99 requests for technical and emergency assistance. All PL 84-99 requests are processed in accordance with the procedure described in the *Memorandum of Understanding between U.S. Army Corps of Engineers (South Pacific Division) and California Department of Water Resources for Cooperative Actions Authorized Under Public Law 84-99 for Responding to Flood Emergencies, June 1999.*

7.2.4 Public Information Officer

The Public Information Officer serves as the primary point of contact between the FOC and the media (routine public calls are first screened by Flood Information Specialists in the Planning / Intelligence Section and are transferred to the Public Information Officer, if required). Assistant Information Officers may be assigned as needed.

A primary source of information for the Public Information function will be from the Planning / Intelligence Chief and Deputy, the Situation Status Unit and other Technical Specialists in Planning / Intelligence. These personnel have the experience necessary to interpret hydrologic, meteorologic, and flood response questions.

Public Information Officers also perform the following duties:

- Coordinate requests for individual staff interviews and press conferences
- Develop the format for press conferences in conjunction with the FOC Director
- Prepare a media-related activities summary once per operational period
- Act as initial contact and escort for on site news media personnel
- Manage the Media Center
- Monitor broadcast media, using information to develop follow-up news releases and rumor control
- Coordinate video recordings of televised flood coverage
- Coordinate photographic and video services for documentation of flood incidents

7.2.5 Rumor Control Coordinator

The function of rumor control is to respond rapidly and with correct and timely information to any and all rumors associated with the emergency. Rumor control is generally handled as a part of the Public Information function, but may be established as a separate unit within the Management Staff as necessary. The Rumor Control Coordinator must work closely with the Public Information function and with the Planning / Intelligence Section.

7.2.6 Liaison Officer

The Liaison Officer function is to provide a primary point of contact for all incoming agency representatives assigned to the FOC. The Liaison Officer will ensure that agency representatives are provided with the necessary workspace, communications, information, and internal points of contact necessary to perform their responsibilities.

It is not uncommon to find many agency representatives reporting to the FOC. Governor's Office of Emergency Services, City and County of Sacramento, CCC, CDF, National Guard, and other federal, state and local agencies may send representative either full or part-time. The Liaison Officer will be their primary contact, and relieve the FOC Director from overseeing their activities.

7.2.7 Safety Officer

The Safety Officer ensures that a safe working environment is established and maintained at the FOC. They will routinely inspect and correct any deficiencies in the operating environment of the FOC and will also ensure that personnel are not over stressed or working for extended periods that may jeopardize their health. They are authorized to stop or modify all unsafe operations outside the scope of the FOC Action

Plan, notifying the FOC Director of actions taken. They must also prepare and maintain a Safety Plan for the duration of the activation period.

7.2.8 Security Officer

The Security Officer position provides access control for the FOC. The FOC Director will establish policy and procedures for access. The Security Officer will normally oversee personnel check-in and checkout rosters. They will provide 24-hour security and will coordinate all security needs with existing Joint Operations Center security personnel and managers and the Emergency Preparedness Manager.

7.2.9 DWR Executive Representative

The Executive Division or higher-level DWR managers delegated by Executive typically serves as the DWR Executive Representative. They act as liaison between the Director, Chief Deputy Director, Deputy Directors, and Division and Office Chiefs and the FOC. They provide department-level policy guidance to the FOC Director and Division of Flood Management.

7.2.10 USACE Representative

The USACE Representative is typically assigned to the FOC from the Sacramento District of the U.S. Army Corps of Engineers South Pacific Division. They work with the PL 84-99 Unit to coordinate and process all PL 84-99 emergency assistance requests, evaluations, and communications between the Corps and the Department.

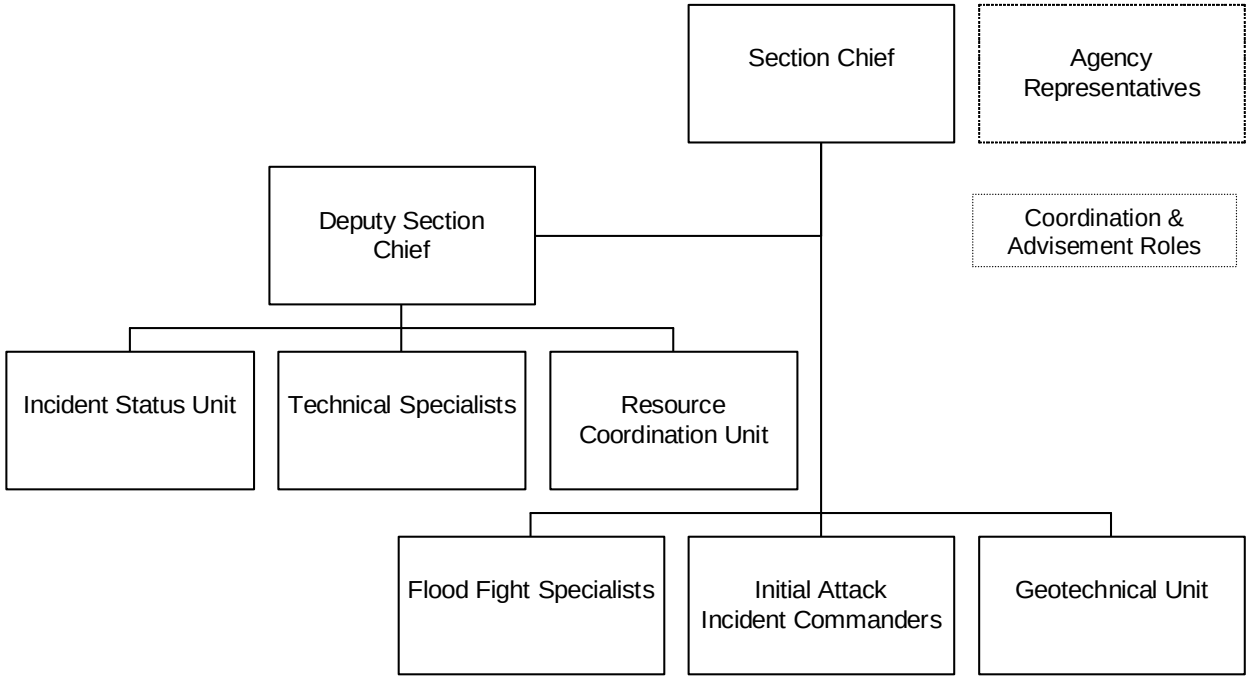
7.2.11 Reclamation Board Representative

The Reclamation Board Representative acts as an information and policy contact between the Board and the FOC Director to keep the Reclamation Board members informed about developing flood conditions.

7.3 Operations Section

Operations positions will vary depending upon the need of the FOC Director for support. The positions described below are the more common Operations positions (Figure 7-3). Note that some positions may be activated at a one-person level, or at a unit level depending upon the level of activation, the work to be accomplished, and the number of personnel needed.

Figure 7-3: Operations Section Organization



7.3.1 Section Chief

The Operations Section Chief, under the direction of the FOC Director, is responsible for implementing action plans to meet the objectives and priorities established by Management. The Chief develops and conducts tactical operations to carry out the responsibilities as stated in the FOC Action Plan within the operational period or within the prescribed timeframe.

While the Chief has overall responsibility for the entire section he or she will delegate coordination of the Incident Status Unit, Technical Specialists, and Resource Coordination Unit to a Deputy Section Chief to distribute the workload and maintain adequate span of control. In these events the Chief will have direct responsibility for the Flood Fight Specialists, Initial Attack Incident Commanders, and Geotechnical Unit, and will coordinate with representatives from outside agencies.

7.3.2 Deputy Section Chief

The Deputy Section Chief is responsible for the Incident Status Unit, Technical Specialists, and Resource Coordination Unit, and will handle any other tasks as delegated by the Section Chief. The Deputy Chief is responsible for maintaining communications and coordination with the Situation and Incident Reports Unit in Planning / Intelligence.

7.3.3 Flood Fight Specialists

Flood Fight Specialists are responsible for gathering information on flood incidents in the field, inspecting more serious incidents either alone or paired with a geotechnical or civil engineer from the U.S. Army Corps of Engineers.

7.3.4 Initial Attack Incident Commanders

After initial technical inspection of a developing flood incident a Flood Fight Specialist may be required to remain at the incident as an Initial Attack Incident Commander to begin direction of flood fight operations until additional resources arrive at the scene. Once the incident is turned over to a permanent Incident Commander the individual will return to the FOC or may be dispatched to another incident.

7.3.5 Geotechnical Unit

The DWR Division of Engineering provides a pool of geotechnical and civil engineers to staff this Unit. They provide additional personnel resources and expertise during more severe flood emergencies when the Flood Fight Specialist pool is insufficient in number.

7.3.6 Incident Status Unit

This unit obtains information and reports on active flood incidents from personnel in the field. They work in close coordination with the Incident Reports Unit in Planning / Intelligence to ensure timely updates of the RIMS Flood Incident Reports Database.

7.3.7 Technical Specialists

Technical Specialists are assigned to the Section to provide specialized skills and experience to meet the mission needs of the Section.

7.3.8 Resource Coordination Unit

This unit works closely with the Logistics Section to prepare, prioritize, and coordinate resource requests from DWR staff in the field, other activated Emergency Response Teams, Operational Areas, and REOCs.

7.3.9 Agency Representatives

Representatives from the California Department of Forestry and Fire Protection, California Conservation Corps, California National Guard, and other emergency response agencies may be assigned to the Operations Section. They provide onsite experts and promote information exchange between their agency, State OES, operational areas, DWR, and other cooperating areas. They should have some level of authorization to speak or act for their agency while at the FOC.

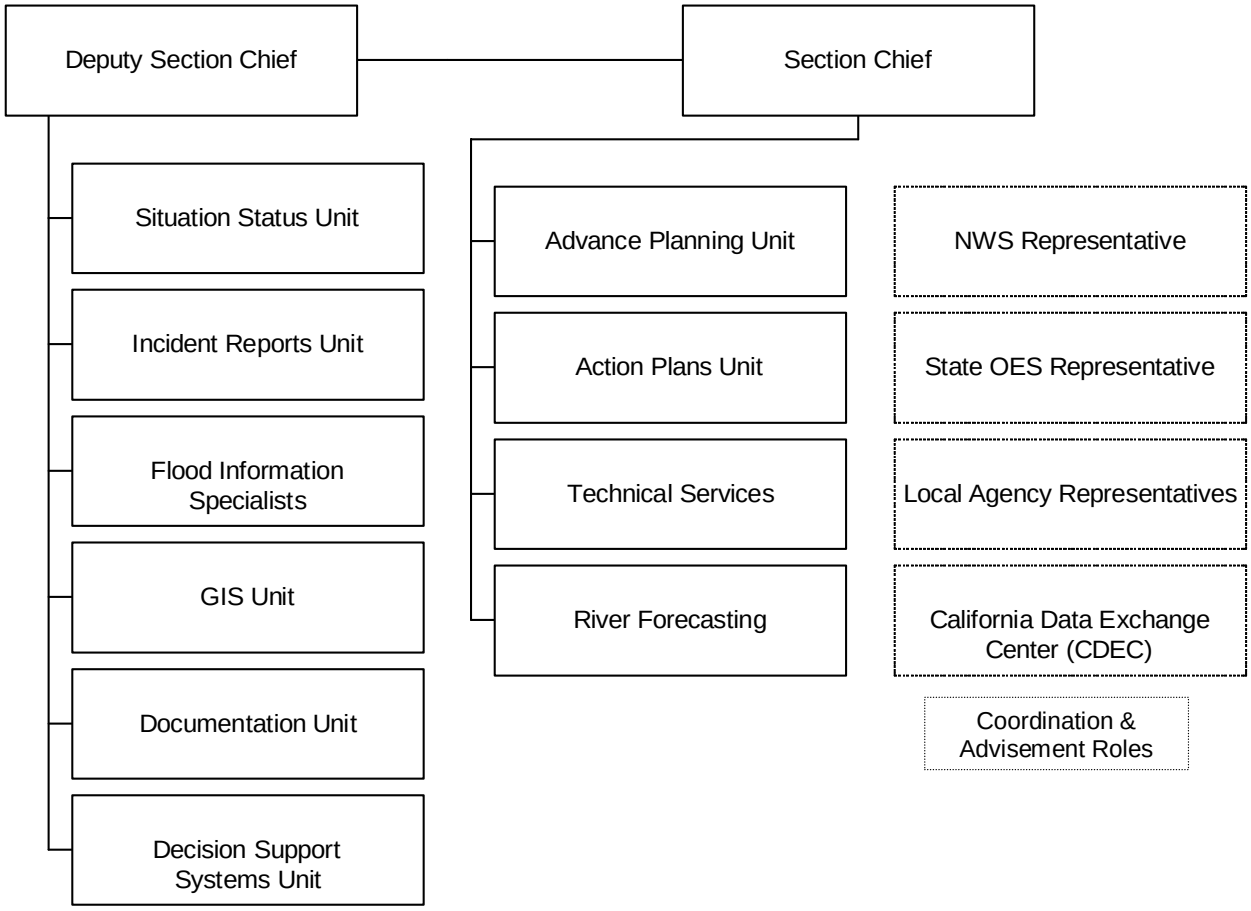
7.4 Planning / Intelligence Section

The Planning / Intelligence Section gathers hydrological, meteorological, and flood incident information from a variety of sources, analyzes and verifies information (i.e., turns information into intelligence), prepares and updates internal FOC information and map displays, and provides technical support services to all FOC Sections. The section coordinates the Weather & Operations Briefings, facilitates the Action Planning Meetings, and prepares and distributes the FOC Action Plan. The section prepares and updates Situation and Incident Reports, disseminates river forecasts and other flood warning products in coordination with the National Weather Service, makes high water notification calls, answers calls from the public, and prepares and provides information to the media in coordination with the Public Information Officers. The section disseminates information to the news media, the general public, and cooperating agencies.

The Section also establishes and maintains contact and coordination with activated EOCs, REOCs, and other DWR Emergency Response Teams. The Situation Analysis Unit, Technical Services Unit, State OES Representative or others as appropriate, may perform this task.

Planning / Intelligence positions will vary depending upon the need of the FOC Director for support. The positions described below are the more common Planning / Intelligence positions (Figure 7-4). Note that some positions may be activated at a one-person level, or at a unit level depending upon the level of activation, the work to be accomplished, and the number of personnel needed.

Figure 7-4: Planning / Intelligence Section Organization



7.4.1 Section Chief

In absence of a Deputy Chief the Chief directs all Section activities. When staffing is expanded to include a Deputy, the Chief focuses on the planning activities of the Section including the Advance Planning Unit, Action Plan Unit, River Forecasting program, Technical Services, and interagency coordination and advisement. Both Chief and Deputy provide technical expertise to assist with media interviews and press conferences.

7.4.2 Deputy Chief

The Deputy Planning/Intelligence Chief assists the Chief by directing the information activities of the Section including the Situation Status Unit, Incident Reports Unit, Flood Information Specialists, Geographical Information System Unit, Documentation Unit, and Decision Support Systems Unit. The Deputy must frequently meet with the Operations Section to ensure cross-coordination on the status of all flood incidents.

7.4.3 Situation Status Unit

This unit oversees the collection, organization, analysis, and dissemination of situation information. It ensures that information collected from all sources is validated prior to posting on status boards or entering into Situation Reports for dissemination to FOC staff and to other EOCs. The unit must work with the other Section Chiefs to ensure that their Status Reports are completed and utilized as a basis for Situation Reports. It is responsible for coordinating high water notification calls and river forecast recordings and may use Flood Information Specialists to assist in these activities. It ensures that adequate personnel are assigned to maintain all maps, status boards, and other displays.

7.4.4 Incident Reports Unit

This unit creates and updates Incident Reports for all flood incidents. A high level of coordination with the Operations Section and with other activated DWR Emergency Response Teams is required to ensure timely issuance and updates of these Reports.

7.4.5 Flood Information Specialists

Flood Information Specialists monitor all types of data and reports on agency web sites and internal decision support systems. They answer telephone inquiries from other agencies, businesses, and private citizens concerned with flood conditions. They respond to questions as appropriate and forward inquiries and information to appropriate FOC personnel. They may be assigned to maintain status displays and reports, make high water notification calls, and update river condition recordings. They may also be assigned to assist with special projects based on their individual aptitudes.

7.4.6 Geographical Information Systems Unit

This unit provides geographical information systems (GIS) mapping support as required to all FOC Sections. Services include status maps, incident mapping, special maps and charts for media interviews, press conferences, PL 84-99 activities, and other GIS-based products.

7.4.7 Documentation Unit

This unit collects, organizes, and files all completed forms, reports, plans, special projects, forecast bulletins, warning products, and all other miscellaneous documentation. It distributes Situation Reports, Incident Reports, Action Plans, and other documents both internally and to other activated EOCs as required, and maintains a permanent electronic archive of these documents.

7.4.8 Decision Support Systems Unit

This unit administers access to and operational readiness of the computer-based Decision Support Systems used at the FOC including access to the Response Information Management System (RIMS) and the California Data Exchange Center (CDEC). It ensures that all application software installed on FOC computer systems is working in coordination with the Decision Support Systems. It coordinates with the National Weather Service to maintain the readiness of the NWS Advanced Weather Information Processing System (AWIPS), and maintains and operates all audio-visual systems at the Flood Operations Center

7.4.9 Advance Planning Unit

The Advance Planning Unit must be proactive attitude, think ahead and anticipate situations and problems before they occur. They review all available status reports, action plans, and other significant documents, and determine potential future impacts of the event or disaster, particularly focusing on issues that might modify the overall strategic FOC objectives. The unit also provides periodic briefings for the FOC Director and general staff, addressing advance planning issues.

FOC demobilization is also tasked to the Advance Planning Unit. The unit develops and formalizes a Demobilization Plan and coordinates its implementation.

7.4.10 Action Plans Unit

This unit develops an FOC Action Plan each operational period based on objectives developed by each FOC Section. The plan includes immediate logistical needs and operational objectives for the next period and potential response and recovery related issues likely to occur beyond the next operational period, generally within 36 to 72 hours. The unit must work with other Section Chiefs to ensure that their Status Reports are completed and utilized as a basis for the plan. It convenes the Action Planning meeting and ensures that after the meeting the Documentation Unit publishes and distributes the Action Plan prior to the beginning of the next operational period.

7.4.11 Technical Services

This unit integrates and coordinates technical specialists assigned to the FOC section. It provides technical observations and recommendations in specialized areas as required. It ensures that qualified specialists are available. Two key specialists are the Chief Hydrologist and State Meteorologist. The Chief Hydrologist provides hydrologic expertise and performs specialized studies as requested. The State Meteorologist provides daily weather briefings, specialized forecasts, and other meteorological expertise. These and other specialists work closely with the Section Chief and Deputy Chief to support media interviews, press conferences, interagency telephone conferences, and other specialized needs.

7.4.12 River Forecasting

The Department of Water Resources and NWS California-Nevada River Forecast Center (RFC) cooperate to produce joint river stage forecasts for main stem rivers in the Sacramento and San Joaquin Valleys, along the North and Central Coasts, in the Northern San Francisco Bay area, in Southern California, and on the east slope of the Sierra Nevada. These forecasts are issued from NWS Weather Forecast Offices as official public warning products, and on the California Data Exchange Center as river forecast bulletins. Forecasting personnel also advise the FOC Director when and how many gates should be opened at the Sacramento Weir.

DWR forecasting personnel are under the direction of the Hydrology Branch Chief while NWS forecasting personnel are under the direction of the River Forecast Center Hydrologist In Charge. The National Weather Service Representative provides coordination with this team.

7.4.13 National Weather Service Representative

The Service Hydrologist for the National Weather Service Sacramento Weather Forecast Office (WFO) serves as the NWS Representative to the FOC. Other WFO personnel fill the position when the Service Hydrologist is off duty. This individual provides an important coordinating link between the meteorological forecast operations at the WFO, the joint DWR/NWS river forecasting operations in the RFC, and the emergency response operations at the FOC. They work closely with the Situation Status Unit to ensure timely updates of the river forecast recordings and that high water notification calls are made. They also provide technical support to other activated OA EOCs and REOCs, and to the media.

During 24-hour FOC operations the NWS will only provide a dedicated representative during the day shift. During the night shift the Situation Status Unit must coordinate with the WFO forecasters directly to keep them apprised of pertinent flood fight activities including levee threats and breaks, evacuated areas, and other critical issues. NWS personnel will also provide a weather briefing in the FOC during the night shift.

7.4.14 State OES Representative

Personnel from the Inland Region of the Governor's Office of Emergency Services fill the position of State OES Representative when the Flood Operations Center and one or more REOCs are activated. They provide an OES expert on site and promote information exchange between State OES, operational areas, DWR, and other cooperating areas. They should have some level of authorization to speak or act for OES. They also provide technical assistance to FOC personnel accessing and interpreting reports in OES' Response Information Management System (RIMS).

7.4.15 Local Agency Representatives

Local agencies may send representatives to the FOC to provide more direct coordination and communication between their agency and DWR. In prior flood emergencies the City and County of Sacramento have been represented at the FOC.

7.4.16 California Data Exchange Center

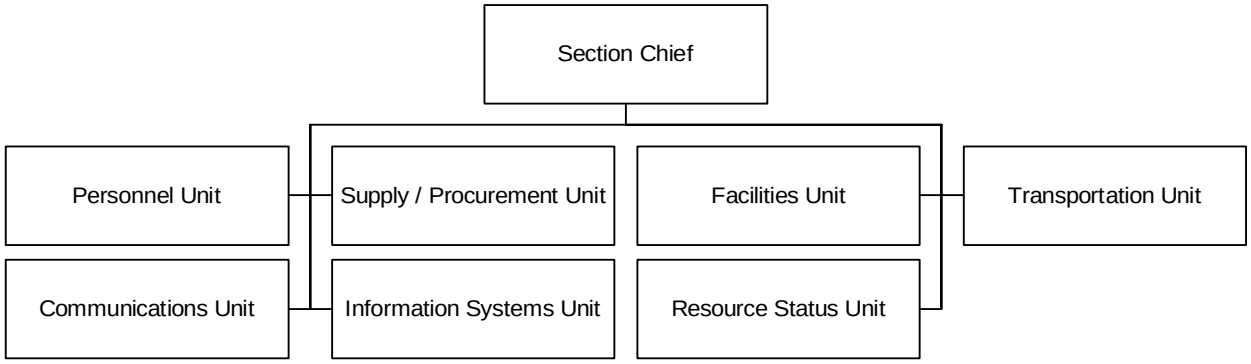
The California Data Exchange Center (CDEC) is the primary decision support system used at the Flood Operations Center. CDEC personnel are responsible for ensuring that river, reservoir, and precipitation data are collected and made available through the CDEC database. The River Forecasting team uses these data to produce river and reservoir inflow forecasts, which CDEC then disseminates to agencies and the public.

7.5 Logistics Section

The Logistics Section procures and allocates required resources to support the FOC emergency response including personnel, services, facilities, transportation, equipment, materials, supplies, food, shelter, and any other required items to meet internal FOC operating requirements, to support flood fight and technical specialists dispatched into the field, and to support and coordinate the logistical needs of other activated DWR Emergency Response Teams and Incident Command Posts. The section also provides status updates in the OES Response Information Management System Mission Request & Tasking database issued from Regional Emergency Operations Centers.

Logistic positions will vary depending upon the need of the FOC Director for support. The positions described below are the more common Logistics positions (Figure 7-5). Note that some positions may be activated at a one-person level, or at a unit level depending upon the level of activation, the work to be accomplished, and the number of personnel needed.

Figure 7-5: Logistics Section Organization



7.5.1 Section Chief

The Logistics Section Chief reports to the FOC Director and must keep the Director informed of all significant issues relating to the Logistics Section. The Chief supervises all Unit Leaders and ensures that the Logistics function is carried out in support of the FOC. The Chief establishes the appropriate level of staffing within the section, continuously monitoring the effectiveness of the organization and modifying it as required. The Chief ensures section objectives as stated in the FOC Action Plan are accomplished within the operational period or within the estimated time frame. The Chief coordinates closely with the Operations Section Chief to establish priorities for resource allocation to flood fight incidents.

7.5.2 Personnel Unit

This unit provides personnel resources as requested to support the FOC. They will identify the number of personnel, special qualification or training, where they are needed, and the person or unit they should report to upon arrival. They will also assist other activated Emergency Response Teams to borrow and move DWR personnel from their regular jobs and dispatch them to emergency response locations in coordination with the Operations Section. They will maintain an overall FOC organization chart.

7.5.3 Supply/Procurement Unit

This unit procures, allocates, and coordinates delivery of supplies and materials. They determine procurement spending limits in conjunction with the Purchasing Unit in Finance / Administration, and maintain a status report for procurement actions. They provide food and lodging for FOC staff in coordination with the Personnel Unit.

7.5.4 Facilities Unit

This unit ensures that adequate essential facilities are provided for the response effort, including securing access to the facilities and providing staff, furniture, supplies, and materials necessary to configure the facilities. If facilities are required away from the FOC they will designate a Facility Manager. They ensure that workspaces are returned to their original state when no longer needed.

7.5.5 Transportation Unit

This unit develops a transportation plan to support FOC operations in coordination with the Operations Section and Situation Status Unit in Planning / Intelligence. They arrange the acquisition or use of required transportation resources and support other activated Emergency Response Teams. They maintain an equipment assignment and position log.

7.5.6 Communications Unit

This unit coordinates communications services including telephone, fax, pagers, and mobile radios. They arrange for acquisition or lease of additional equipment to support FOC operations and other activated Emergency Response Teams. They coordinate internal communications services with assistance from the Telecommunications Office of the Division of Technical Services.

7.5.7 Information Systems Unit

This unit coordinates FOC information technology services including desktop and laptop computers, peripheral equipment, handheld devices, global positioning devices, and system and application software. They arrange the acquisition or lease of additional computer equipment to support other activated Emergency Response Teams.

7.5.8 Resource Status Unit

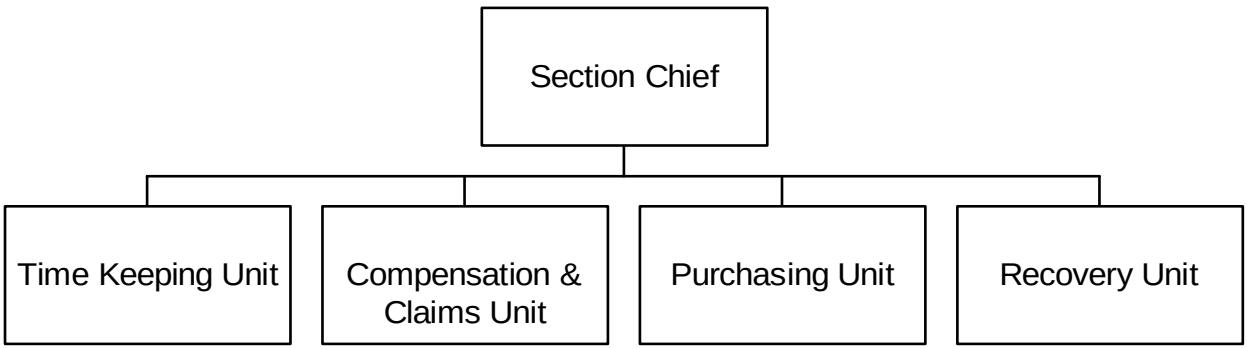
This unit coordinates with other Logistics Section units to capture, record, and centrally report resource/location status information.

7.6 Finance / Administration Section

The Finance / Administration function in the FOC manages all financial, administrative, and cost analysis aspects of the emergency. Initially, this work may be done in the FOC, but in later stages of the emergency this function may be accomplished at other locations.

Finance / Administration positions will vary depending upon the need of the FOC Director for support. The positions described below are the more common Finance / Administration positions (Figure 7-6). Note that some positions may be activated at a one-person level, or at a unit level depending upon the level of activation, the work to be accomplished, and the number of personnel needed.

Figure 7-6: Finance / Administration Section Organization



7.6.1 Section Chief

The Finance / Administration Section Chief reports to the FOC Director and must keep the Director informed of all significant issues relating to the Finance / Administration Section. The Chief supervises all Unit Leaders and ensures that the Finance / Administration function is carried out in support of the FOC. The Chief establishes the appropriate level of staffing within the section, continuously monitoring the effectiveness of the organization and modifying it as required. The Chief ensures section objectives as stated in the FOC Action Plan are accomplished within the operational period or within the estimated time frame.

7.6.2 Time Keeping Unit

This unit tracks, records, and reports all on-duty time for personnel working at the FOC. They ensure that personnel time records, travel expense claims, and other related forms are prepared and submitted promptly.

7.6.3 Compensation and Claims Unit

This unit oversees the investigation of injuries and property or equipment damage claims that arise during the emergency. They complete all forms required by worker's compensation programs. They maintain a file of injuries and illnesses associated with the emergency that includes results of investigations.

7.6.4 Purchasing Unit

This unit coordinates vendor contracts not previously addressed by existing approved vendor lists. They coordinate with the Supply / Procurement Unit in Logistics on all matters involving the need to exceed established purchase order limits.

7.6.5 Recovery Unit

This unit collects and maintains documentation of all emergency information for reimbursement from the Federal Emergency Management Agency (FEMA) and/or the Governor's Office of Emergency Services. They coordinate all fiscal recovery with disaster assistance agencies, and prepare and maintain a cumulative cost report for the emergency.

Appendices

The following appendices are included in this manual:

A. Authorities
B. References
C. Protocol for Staffing the Flood Operations Center During Flood Emergencies
D. Flood Alert Declaration Memo
E. Flood Mobilization Declaration Memo
F. River Stage and Datum Definitions
G. Official National Weather Service River Forecast Points
H. Acronym List

The following appendices are published under separate cover:

- *Directory of Flood Officials (updated annually)*
- *Superintendent's Guide to Operation and Maintenance of California's Flood Control Projects*
- *Administrative Procedures of the State-Federal Flood Operations Center*

Appendix A. Authorities

The Department's emergency response responsibilities are derived from the following authorities and references:

- *California Emergency Services Act, Government Code* Sections 8550-8668
- Governor's Executive Order W-9-91
- Governor's Executive Order W-156-97
- Department of Water Resources Administrative Order, 1992
- *California Water Code*, Division 5, Part 2 – Flood Control Law
- *California Water Code*, Division 5, Part 4 – Reclamation Board
- *California Water Code*, Division 6, Part 6, Chapter 3 – Flood Control Law of 1946
- *California Water Code*, Division 3, Chapter 4, Article 3, Sections 6110-6113
- *Public Contract Code*, Section 10122, State Contract Act
- *Natural Disaster Aid Act, Government Code* Section 8680
- *California State Emergency Plan*, 1998
- *California Disaster and Civil Defense Master Mutual Aid Agreement*
- *California Code of Regulations*, Title 19
- *California Labor Code* Section 2801, Employees Safety Act

Chapter 7 of Division 1 of Title 2 of the Government Code, also known as the Emergency Services Act, defines the Governor as chief constitutional officer of the State and outlines the emergency powers of the Governor. The California Emergency Council is the official advisory body to the Governor during emergencies and on matters pertaining to emergency preparedness. The Emergency Services Act also establishes the Office of Emergency Services, assigns functions to state agencies during an emergency, outlines the mutual aid concept, and authorizes the establishment of organizations to take actions on the provisions outlined in the Emergency Services Act.

The Governor's Office of Emergency Services (OES) performs executive functions assigned by the Governor. The OES Director coordinates the State's disaster preparedness and response activities with representatives of State agencies, under the authority of the *Emergency Services Act and Executive Order W-9-91*.

The Department is designated the lead State agency for flood response. While Section 128(b) of the California Water Code reaffirms the authority of the Governor's Office of Emergency Services to "coordinate and supervise State action, upon a declaration of a State emergency, under the California Emergency Services Act," Section 128(a) describes the Department's separate, permissive authority:

> "In times of extraordinary stress and of disaster, resulting from storms and floods…the Department may perform any work required or take any remedial measures necessary to avert, alleviate, repair, or restore damage or destruction to property having a general public and state

> interest… In carrying out that work, the department may perform the work itself, or through or in cooperation with any other State department or agency, the federal government, or any political subdivision, city, or district."

Section 128 does not require the Department to take any particular action nor assume any responsibility beyond its normal program responsibilities. However, the California Emergency Services Act, specifically Government Code Section 8607, provides the Department broad authority to fully participate in all aspects of emergency response within the SEMS structure.

The Department's goals to help protect life and property from catastrophic events such as flood, drought, and dam or levee failure is set forth in the *State Emergency Plan, Government Code* Section 8558, and *Water Code* Sections 128, 6075, and 6100.

Appendix B. References

Published by the State of California

- *California Emergency Services Act*
- *California Code of Regulations*, Title 19
- *California Labor Code* Section 2801, Employees Safety Act
- *Governor's Executive Order W-9-91*
- *Governor's Executive Order W-156-97*
- *California Water Code*, Division 5, Part 2 – Flood Control Law
- *California Water Code*, Division 5, Part 4 – Reclamation Board
- *California Water Code*, Sections 12310 – 12316 Special Flood Control Project Program, Senate Bill 34 (Delta Flood Protection Act of 1988)
- *California Water Code*, Sections 12980 to 12995 and 12300 to 12316 – Special Flood Control Project Program, Assembly Bill 360 (Delta Flood Protection Fund, 1996)
- *California Water Code*, Sections 12800 to 12832 – Flood Control Law of 1946
- *California Water Code*, Sections 6110 to 6113 – Emergency Work
- *Final Report of the Flood Emergency Action Team, The Resources Agency, May 1997*
- *Natural Disaster Aid Act, Government Code* Section 8680
- *Public Contract Code*, Section 10122, State Contract Act

Published by the Department of Water Resources

Administrative Orders, 1991
Business Resumption Plan, July 1999.
Crisis Information Management Plan, September 1997.
Emergency Action Plan for the Joint Operations Center, Employee Handbook, September 2001 Final Draft.
Emergency Response Plan, May 2000.
Flood Fighting Methods, Volume II, 1997.
Guidelines for the Flood Fight Specialist and Initial Attack Incident Commander, (Draft) June 1998.
Incident Command System, Field Operations Guide, DWR/ICS 420-1, September 1989, (update in progress).
Memorandum of Understanding between U.S. Army Corps of Engineers (South Pacific Division) and California Department of Water Resources for Cooperative Actions Authorized Under Public Law 84-99 for Responding to Flood Emergencies, June 1999.
North Coast Emergency Response Plan, Eureka Flood Center, March 1999.
Operational Description, DWR/ICS 120-1, Oct. 1989.
Operation Recovery Plan, February 1999.
Standard Operating Orders, Division of Operations and Maintenance.
Emergency Action Plans, Division of Operations and Maintenance Field Divisions.

Water Resources Engineering Memorandum #8D, General Procedures for Flood Operations, November 1983.
Water Resources Engineering Memorandum #63, Levee-Endangering Incidents in the Delta, January 1999.

Published by the Governor's Office of Emergency Services

Flood Preparedness Guide for Levee Maintaining Agencies, November 1997.
Guidelines for Coordinating Flood Emergency Operations, November 1997.
Legal Guidelines for Flood Evacuation, November 1997.
Protocol for Closure of Delta Waterways, November 1997.
SEMS Resource Ordering and Tracking: A Guide for State and Local Government, January 1999.
State of California Emergency Plan, May 1998.

Published by Other Agencies

Standard Operations and Maintenance Manual, Sacramento River Flood Control Project, Sacramento District, Corps of Engineers, U.S. Army, Sacramento, CA., May, 1955.
The New Public Assistance Program Orientation Manual, Federal Emergency Management Agency, November 1998.

Appendix C. Protocol for Staffing the Flood Operations Center During Flood Emergencies (page 1 of 2)

State of California — The Resources Agency

Memorandum

Date : MAR 0 1 2000

To : Office/Branch/Section Chiefs for
Division of Flood Management

From : George T. Qualley, Chief
Division of Flood Management
Department of Water Resources

Subject: Protocol for Staffing the Flood Operations Center During Flood Emergencies

As briefly discussed during our February 15, 2000 meeting, I want to clarify the Division of Flood Management's policy for staffing the Flood Operations Center to meet public demand during an escalating flood event.

Staffing: When a severe storm pattern or other flood potential develops, the Flood Operations Branch may require additional personnel to be temporarily assigned to the Flood Operations Center to meet increasing information needs of the public, media, emergency assistance, and flood management agencies. Regularly assigned personnel from the Flood Operations and Hydrology Branches, the National Weather Service Sacramento Forecast Office, and when applicable, the Information Services Branch of the Office of Water Education expand their regular duties to meet these needs.

When more personnel are required, they are first obtained from within DFM. At the request of the Flood Operations Branch Chief, I will assign staff from throughout the Division to work at the Flood Operations Center. While deciding which staff will be assigned, I will take into consideration the workload of different branches, and previous staff training and experience.

Flood Alert and Activation: Forecasts of sustained storm patterns and resulting flood potentials, coordination of field operations, or technical support to local agencies may require the Flood Operations Branch Chief to declare a Flood Alert to officially activate the Flood Operations Center under the Standardized Emergency Management System. When the Center is activated, personnel report for duty on shifts as directed by the Chief of the Flood Operations Branch (functioning under SEMS as the FOC Director) to provide up to 24-hour staffing.

If additional personnel resources beyond the capability of the Division are needed to staff the Flood Operations Center under extended hours, (which typically happens under "Flood Alert" status) they will be requested first from the Division of Planning and Local Assistance Headquarters and District Offices, and then from other Department of Water Resources' divisions and offices. Department staff outside of DFM, upon being released for Flood Center duty by their respective Division/Office Chief, will be utilized according to aptitude, training and previous experience.

SURNAME | Jay Punia | Jay Punia 2/29/00

Appendix C. Protocol for Staffing the Flood Operations Center During Flood Emergencies (page 2 of 2)

Office/Branch/Section Chiefs for
Division of Flood Management
MAR 0 1 2000
Page 2

Flood Mobilization: Sustained severe storms and flooding may require further Department personnel, equipment, material, and financial resources for an extended period. To meet this need, the Director may declare a Flood Mobilization. When a Flood Mobilization is declared, DFM is authorized to use any Department personnel and expenditures beyond budgeted funding.

If you have any questions or need further information, please contact Jay Punia, Chief of the Flood Operations Branch, at (916) 574-2611.

cc: Sonny Fong
Peter Rabbon
Bill Bennett
Pete Weisser
Keith Luster

Appendix D. Flood Alert Declaration Memo

State of California — The Resources Agency

Memorandum

Date : February 3, 1998

To : Distribution List

From : James Q. Coe, Chief
Flood Operations Branch
Department of Water Resources

Subject: **Flood Alert**

By this memorandum I declare a Flood Alert beginning on February 2, 1998 at 1700 hours, to deal with flood-related problems arising from recent storms and forecasts of additional precipitation throughout California. The purpose is to increase flood information processing capability, to make the required warning calls in response to river forecasts, and to be in readiness to facilitate flood fight efforts by local, State, and U.S. Army Corps of Engineers forces on the Sacramento River Flood Control Project, the San Joaquin River Flood Control System, and elsewhere, should such efforts become necessary.

The State-Federal Flood Operations Center will remain open for extended hours as needed, including weekends. Our plan is to remain 24 hours tonight. We will reevaluate the alert status each afternoon. The current forecast for the Sacramento River at "I" Street is 23.0 feet. Should a warning stage be forecast for "I" Street at any time, we will remain open 24 hours. We will request support from additional personnel as needed.

If you have any questions, please call me at 574-2611.

Distribution List:

David N. Kennedy
Robert G. Potter
Raymond D. Hart
Stephen L. Kashiwada
Anita Garcia-Fante
George T. Qualley
Vernon H. Persson
Maury Roos
Gary Hester
Rod Mayer
Eric Butler
Don Yeoman
Mark Heggli
Linnet Fong
Glee Valine
Lynda Marty
Diana Cobleigh
Glen Pearson, Northern District
Curt Schmutte, Central District
Brian Smith, San Joaquin District
William Hom, Southern District
Rob Hartman, CNRFC
Jerry Colivas, OES

SURNAME				

DWR 188 (Rev. 2/86)

Appendix E. Flood Mobilization Declaration Memo

State of California — The Resources Agency

Memorandum

Date : February 5, 1998

To : Division/District Chiefs

From : Department of Water Resources

Subject : Flood Mobilization

Current flood conditions and forecasted continued wet weather throughout the State necessitate the mobilization of the Department to prepare river forecasts, manage flood-related information, provide technical assistance and fight floods on a time basis of up to 24 hours per day, as needed. In accordance with established procedures, as set forth in the Flood Emergency Operations Manual, I declare the Department to be under an emergency and mobilized as of February 2, 1998.

Personnel requested by the State-federal Flood Operations Center shall be available for duty in the Center or in the field as called upon, and are temporarily relieved of other duties until dismissed by the Flood Operations Center Director.

The Chief of the Division of Fiscal Services shall take steps to obtain the necessary funds for materials, emergency equipment, and for salaries of personnel who have been working and are continuing to work on flood operations.

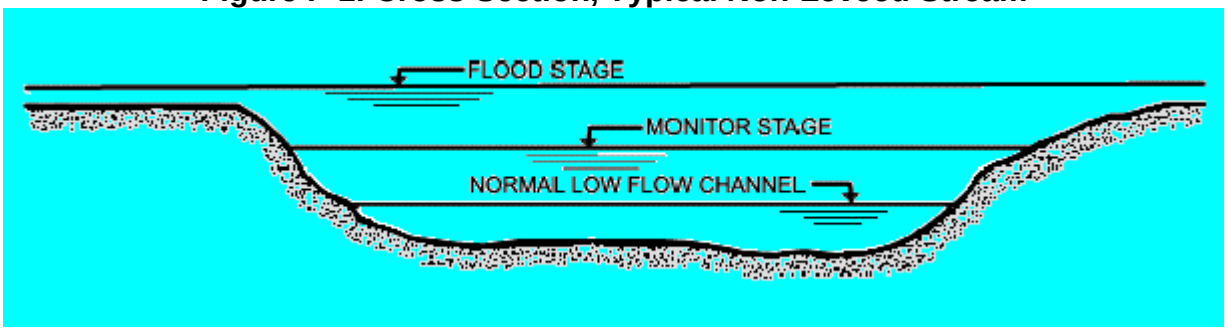
for David N. Kennedy
Director

cc: (See attached list.)

Appendix F. River Stage and Datum Definitions

The physical differences between leveed and non-leveed streams must be clearly understood when interpreting the action level or response required at monitor, flood and danger stages. These differences are illustrated in Figures F-1 and F-2 below.

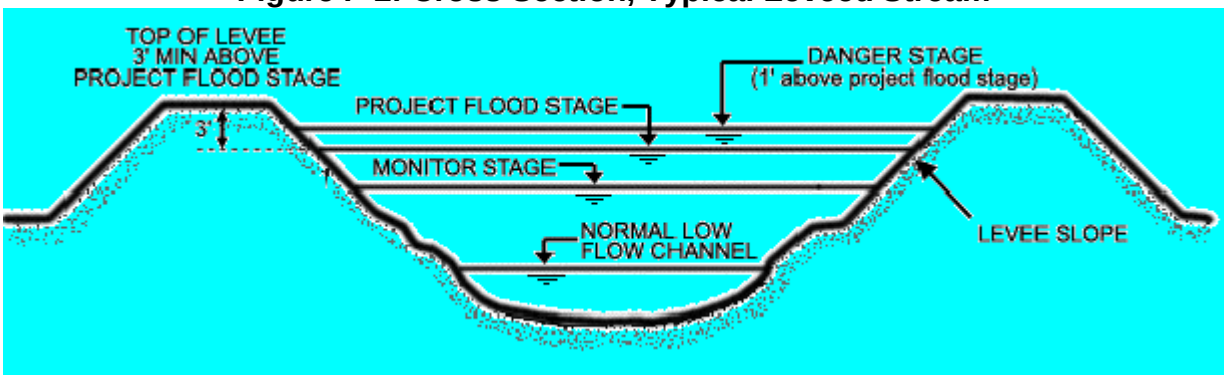
Figure F-1: Cross Section, Typical Non-Leveed Stream



Monitor Stage – The stage (water surface elevation) at which initial action must be taken by concerned interests (livestock warning, removal of equipment from lowest overflow areas, or simply general surveillance of the situation). This level may produce over bank flows sufficient to cause minor flooding of low-lying lands and local roads.

Flood Stage – The stage (water surface elevation) at which over bank flows are of sufficient magnitude to cause considerable inundation of land and roads and/or threat of significant hazard to life and property.

Figure F-2: Cross Section, Typical Leveed Stream



Monitor Stage – The stage (water surface elevation) at which patrol of flood control project levees by the responsible levee maintaining agency becomes mandatory, or the Stage at which flow occurs into bypass areas from project overflow weirs.
Project Flood Stage – The stage (water surface elevation) in a flood control project that is at the maximum design level (U.S. Corps of Engineers "Project Flood Plane"). At this level there is a minimum freeboard of 3 feet to the top of levees.

Danger Stage – The stage (water surface elevation) at which the flow in a flood control project is greater than maximum design capacity and where there is extreme danger

with threat of significant hazard to life and property in the event of levee failure. This is generally 1 foot above project flood stage.

Section 8.02 of the Standard Operation and Maintenance Manual for the Sacramento River Flood Control Project[1] further defines the threat of floodwaters against levees by stating, “An earthen levee is in danger whenever there is water against it. This danger increases with the height of the water, the duration of the flood stage, and the intensity of either the current or wave action. A well-constructed levee of correct cross section should, if properly maintained and not overtopped, hold throughout any major flood. Threatened failures, such as sand boils, sinking levees, slides, or sloughing can be met if prompt action is taken and proper methods of treatment are used.”

NGVD and USED Vertical Datums

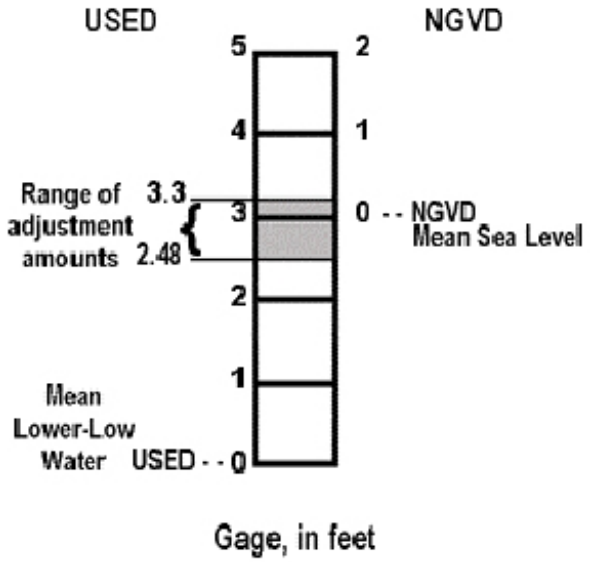
The Zero datum for each gage listed is referenced to either National Geodetic Vertical Datum of 1929 (NGVD) or to the United States Engineering Datum (USED).

For historic reference the NGVD Datum was previously denoted as the U.S. Coast and Geodetic Survey Mean Sea Level Datum (US.C.&GS), while the USED Datum was previously denoted as the U.S. Army Corps of Engineers' Datum (C. of E.).

In the Sacramento and San Joaquin River Basins, the adjustment from USED to NGVD (Figure 8-3) varies from station to station within a range of 2.48 feet to 3.3 feet. When not otherwise known the commonly used adjustment is 3.0 feet.

[1] Standard Operations and Maintenance Manual, Sacramento River Flood Control Project, Sacramento District, Corps of Engineers, U.S. Army, Sacramento, CA., May, 1955.

Figure F-3: Relationship Between USED and NGVD Vertical Datums



North American Vertical Datum of 1988

The federal government has adopted a new official vertical datum for the United States called the North American Vertical Datum of 1988 (NAVD). This datum will reference all benchmarks in Canada, the United States including Alaska, and Mexico to sea level using a primary tidal benchmark at Father Point / Rimousky located near the mouth of the St. Lawrence River in Quebec. A gradual transition is underway to change from the NGVD datum widely used in California and on U.S. Geologic Survey quadrangle maps.

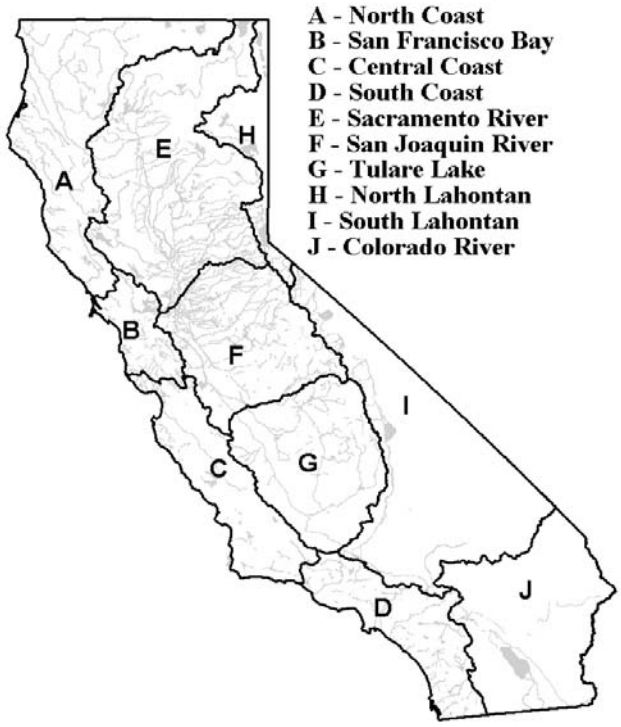
Since the NAVD datum is based on sea level on the east coast of the continent it is lower than NGVD in California, generally varying from 2.3 to 3.3 feet, depending on location. Differences in much of the Central Valley are in the 2.3 to 2.6 foot range. Therefore the new datum is around 1/2 foot above the old USED datum widely used for Sacramento River system stage gages. In time as more precise regional determinations become available we expect that all forecasting station gages will be reset to the NAVD datum.

Appendix G. Official National Weather Service River Forecast Points

Stream gage forecast point metadata are shown on the following pages. The locations are grouped by the following river forecast bulletins in which they would appear, and are ordered within each group by watercourse from upstream to downstream. The bulletins generally forecast streams wholly within one of California's hydrologic regions (Figure G-1).

- North Coast (CDEC NORBUL)
- Russian / Napa (CDEC BAYBUL)
- Central Coast (CDEC CENBUL)
- Southern California (CDEC SCALBUL)
- Upper Sacramento (Bend Bridge to Tisdale Weir, CDEC USACBUL)
- Lower Sacramento River System (Fremont Weir to I Street and tributaries, CDEC LSACBUL)
- Delta Tide (CDEC TIDES)
- San Joaquin River System (CDEC SANBUL)
- East Side Sierra Basins (CDEC EASTBUL)

Figure G-1: California's Hydrologic Regions



North Coast Forecast Points

		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
SMITH RIVER								
near Crescent City (Jed Smith State Park)	JED	25'	29'					48.5' on Dec 22, 1964
near Fort Dick (Dr. Fine Bridge)	DRF	27'	33'					39.5' on Dec 22, 1964
SCOTT RIVER (Klamath River Tributary)								
near Fort Jones	SFJ	12'	15'					25.34' on Dec 22, 1964
TRINITY RIVER (Klamath River Tributary)								
at Hoopa	HPA	44'	48'					57.0' on Dec 22, 1964
KLAMATH RIVER								
near Seiad Valley	KSV	15'	17'					33.75 on Dec 23, 1964
at Orleans	OLS	32'	38'					48.3' on Dec 22, 1964
near Klamath (Turwar Creek)	TUR			26'	34' *	59'	61.5'	55.3' on Dec 23, 1964 **
REDWOOD CREEK								
at Orick	ORK			26'	32'	35'	37'	28.22' on Jan 1, 1997
MAD RIVER								
near Arcata	ARC	15'	22'					30.7' on Feb 22, 1964 *
VAN DUZEN RIVER (Eel River Tributary)								
near Bridgeville (Grizzly Creek State Park)	BRI	13'	17'					24.0' on Dec 22, 1964
EEL RIVER								
at Fort Seward	FSW	55'	not established					82.6' on Dec 22, 1964
South Fork near Miranda (at Sylvandale)	MRD	27'	33'					46.0' on Dec 22, 1964
at Scotia	SCO	45'	51'					72.0' on Dec 23, 1964
at Fernbridge	FER	14' *	20'					29.5' on Dec 23, 1964 **
NAVARRO RIVER								
near Navarro	NRN	not established	23'					41.13' on Jan 16, 1974
RUSSIAN RIVER								
near Hopland	HOP	18'	21'					30.0' in Dec 1937 flood

North Coast Forecast Points (continued)

WATERCOURSE and Forecast Point	DATUM 0	ADJUST TO NGVD	REMARKS	OPERATING AGENCIES
SMITH RIVER				
near Crescent City (Jed Smith State Park)	79.26' NGVD		Peak stage from floodmarks. Prior to October 9, 1991, at site 1.1 miles upstream at datum 10.35 feet higher.	USGS, DWR
near Fort Dick (Dr. Fine Bridge)	0.0' NGVD		Records prior to Oct '89 maintained by DWR. Stages may be influenced by tides.	USGS, DWR
SCOTT RIVER (Klamath River Tributary)				
near Fort Jones	2,623.8 NGVD		Peak stage from floodmarks at site 400' downstream at datum 2.0' higher.	USGS
TRINITY RIVER (Klamath River Tributary)				
at Hoopa	274.82' NGVD		Peak stage from floodmarks.	USGS, DWR
KLAMATH RIVER				
near Seiad Valley	1,320.0' NGVD		Peak stage from floodmarks.	USGS
at Orleans	353.98' NGVD		Peak stage from floodmarks.	USGS, DWR NWS
near Klamath (Turwar Creek)	0.0' NGVD		* Inundates Access Road. ** At prior site 2.6 miles upstream at datum 5.60 ft NGVD. Stages may be influenced by tides.	USGS, DWR
REDWOOD CREEK				
at Orick	5.16' NGVD		Stages may be influenced by tides.	USGS, DWR
MAD RIVER				
near Arcata	10.79' NGVD		* At prior datum, present site. Stages may be influenced by tides.	USGS
VAN DUZEN RIVER (Eel River Tributary)				
near Bridgeville (Grizzly Creek State Park)	358.18' NGVD		Peak stage from floodmarks.	USGS, DWR
EEL RIVER				
at Fort Seward	217.26' NGVD		Peak stage from floodmarks.	USGS, DWR NWS
South Fork near Miranda (at Sylvandale)	217.57' NGVD		Peak stage from floodmarks.	USGS, DWR
at Scotia	35.5' NGVD		Peak stage from floodmarks.	USGS, DWR
at Fernbridge	3.64' NGVD		* Stockman's lowland warning. ** Records prior to Oct. '89 maintained by DWR. Stages may be influenced by tides.	USGS, DWR
NAVARRO RIVER				
near Navarro	4.79' NGVD			USGS
RUSSIAN RIVER				
near Hopland	497.61' NGVD		Peak stage from floodmarks.	USGS, DWR Sonoma Co.

Russian / Napa Forecast Points								
		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	CDEC	MONITOR	FLOOD	MONITOR	PROJECT	DANGER	TOP OF	PEAK STAGE AND
and Forecast Point	ID	STAGE	STAGE	STAGE	FLOOD STG.	STAGE	LEVEE	DATE OF RECORD
RUSSIAN RIVER								
near Hopland	HOP	18'	21'					30.0' in Dec 37 flood
near Healdsburg	HEA	15'	19'					30.8' in Dec 37 flood
at Guerneville Bridge	GVB	29'	32'					48.8' on Feb 18, 1986
NAPA RIVER								
near St. Helena	STH	11'	13'					18.52' on Feb 17, 1986
near Napa	NAP	22'	25' *					30.5' on Mar 9, 1995

Russian / Napa Forecast Points (continued)

WATERCOURSE and Forecast Point	DATUM 0	ADJUST TO NGVD	REMARKS	OPERATING AGENCIES
RUSSIAN RIVER				
near Hopland	497.61' NGVD		Peak stage from floodmarks.	USGS, DWR Sonoma Co.
near Healdsburg	77.01' NGVD		Peak stage from floodmarks.	USGS, DWR
at Guerneville Bridge	8.67' NGVD			USGS, DWR
NAPA RIVER				
near St. Helena	170.12' NGVD			USGS, DWR
near Napa	24.74' NGVD		* Causes flooding downstream, 29' causes flooding at gage site.	USGS, DWR

Central Coast Forecast Points								
		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
GUADALUPE RIVER								
San Jose	n/a	10'	12'					17.4' on Mar 10, 1995
COYOTE CREEK								
Edenvale	n/a	9'	10'					12.8' on Feb 10, 1922
PAJARO RIVER								
at Chittenden	CHT	25'	32'					33.74' on Feb 3, 1998
SALINAS RIVER								
at Paso Robles	PAS	13'	19'					23.8' on Jan 25, 1969
near Bradley	BRA	12'	14'					23.44' on Mar 11, 1995
near Spreckles	SPR	19'	23'					30.29' on Mar 12, 1995
CARMEL RIVER								
Robles Del Rio	n/a	8'	9'					12.9' on Mar 10, 1995

Central Coast Forecast Points (continued)				
WATERCOURSE		**ADJUST**		**OPERATING**
and Forecast Point	**DATUM 0**	**TO NGVD**	**REMARKS**	**AGENCIES**
GUADALUPE RIVER				
San Jose	72.0 NGVD			USGS, DWR
COYOTE CREEK				
Edenvale	171.0' NGVD			SCVWD
PAJARO RIVER				
at Chittenden	81.89' NGVD			USGS, DWR
SALINAS RIVER				
at Paso Robles	670.61 NGVD		Peak stage from floodmarks.	USGS, DWR
near Bradley	442.69' NGVD			USGS, DWR
near Spreckles	20.56' NGVD *			USGS, DWR
CARMEL RIVER				
Robles Del Rio	268.57' NGVD			USGS, MCWRA

Southern California Forecast Points

		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
SISQUOC RIVER								
at Garey	n/a	7.5'	10'					13.5' on Dec 6, 1966 (since Henshaw Dam)
SANTA YNEZ RIVER								
at Narrows near Lompoc	NRW	11'	15'					24.2' on Jan 25, 1965
SANTA CLARA RIVER								
at Montalvo	MNV	12.6'	14.2'					23.07' on Jan 25, 1969
SAN LUIS REY RIVER								
at Oceanside	n/a	being established						21.7' on Jan 16, 1993
SAN DIEGO RIVER								
at Fashion Valley	FSN	8.3	11.3					19.3' on Jan 27, 1916 (prior location and datum) 13.47' on Mar 6, 1995 (since storage began in El Capitan and San Vicente Reservoirs)

Southern California Forecast Points (continued)

WATERCOURSE and Forecast Point	DATUM 0	ADJUST TO NGVD	REMARKS	OPERATING AGENCIES
SISQUOC RIVER				
at Garey	354.8' NGVD			USGS
SANTA YNEZ RIVER				
at Narrows near Lompoc	85.0' NGVD			USGS
SANTA CLARA RIVER				
at Montalvo	46.88' NGVD			City of Ventura
SAN LUIS REY RIVER				
at Oceanside	20.0' NGVD			USGS
SAN DIEGO RIVER				
at Fashion Valley	20.0' NGVD			San Diego Co.

Upper Sacramento Forecast Points								
		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
SACRAMENTO RIVER								
at Bend Bridge (near Red Bluff)	BND	22'	27'					38.9' on Feb 28, 1940 (before Shasta Dam) * 36.6' on Jan 24, 1970
at Red Bluff Diversion Dam	RDB	250'	253'					260' on Jan 2, 1997 *
at Tehama Bridge	TEH	210'	213'					222.7 on Mar 1, 1983
at Vina-Woodson Bridge	VIN	180'	183'					191.5' on Jan 24, 1970 *
at Hamilton City	HMC	143'	148'					150.92' on March 2, 1997
at Ord Ferry	ORD			110'	114'.0 LB 121.6' RB	122.6'	125' *	121.7' on Feb 28, 1940 (before Shasta Dam) 120.1' on Feb 25, 1958
at Butte City	BTC			89'	97.2'	98.2'	101'	96.9' on Feb 7, 1942 (before Shasta Dam) 96.7' on Feb 20, 1958
at Moulton Weir	MLW			76.8' *	84.4'	85.4'	89.2'	83.8' on Feb 7, 1942 (before Shasta Dam) 83.71' on Mar 3, 1983
at Colusa Weir	CLW			61.8' *	71'	72'	74.8' LB 75.7' RB	70.6 on Mar 1, 1940 (before Shasta Dam) 68.96' on Mar 4, 1983
at Colusa	COL			63'	70'	71'	73' LB 77' RB	69.2' on Feb 8, 1942 (before Shasta Dam) 68.65' on Jan 3, 1997
at Tisdale Weir	TIS			45.5' *	53'	54'	57' LB 59' RB	53.3' on Mar 1, 1940 (before Shasta Dam) 53.1' on Jan 3, 1997

Upper Sacramento Forecast Points (continued)				
WATERCOURSE		**ADJUST**		**OPERATING**
and Forecast Point	**DATUM 0**	**TO NGVD**	**REMARKS**	**AGENCIES**
SACRAMENTO RIVER				
above Bend Bridge (near Red Bluff)	285.77' NGVD		Stages shown are for flow values sufficient to cause monitor and flood stages downstream. * Site and datum then in use.	USGS, DWR
at Red Bluff Diversion Dam	230.77' NGVD		Relocated from prior site on Antelope Bridge 2.3 miles upstream. * Max stage estimated from high water marks.	USBR, DWR
at Tehama Bridge	-5.7' NGVD			DWR
at Vina-Woodson Bridge	0' USED	Use -3.0'	* Measured on staff gage	DWR
at Hamilton City	0' USED	-2.86'		DWR
at Ord Ferry	0' USED	-2.48'	Right bank only.	DWR
at Butte City	0' USED	-2.92'		DWR
at Moulton Weir	0' USED	-2.85'	Free overflow - no gates. * Weir crest elevation	DWR
at Colusa Weir	0' USED	-2.89'	Free overflow - no gates. * Weir crest elevation	DWR
at Colusa Bridge	0' USED	-2.95'		USGS, DWR
at Tisdale Weir	0' USED	-3.05'	Free overflow - no gates. * Weir crest elevation	DWR

Lower Sacramento River System Forecast Points

		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
SACRAMENTO RIVER								
at Fremont Weir	FRE			33.5' *	40.8'	41.8'	45.4'	42.47' on Jan 2, 1997
at Verona	VON			none	41.3'	42.3'	46' LB 47' RB	42.11' on Feb 20, 1986
at I Street Bridge	IST			25'	31'	32'	34'	30.68' on Feb 19, 1986
FEATHER RIVER (Sacramento River Tributary)								
near Gridley	GRL			95'	103.8'	104.8'	107.2' *	102.25' on Dec 23, 1955 (before Oroville Dam) 100.06' on Feb 19, 1986
at Yuba City	YUB			65'	80.2'	81.2'	87.0 LB 83.5' RB	82.4' on Dec 24, 1955 (before Oroville Dam) 78.23' on Jan 2, 1997
near Nicolaus	NIC			40'	48'	49'	54.5'	51.6' on Dec 23, 1955 (before Oroville Dam) * 50.4' on Jan 2, 1997
AMERICAN RIVER (Sacramento River Tributary)								
at H Street Bridge	HST			40'	42.8'	43.8'	52.0' LB 47.5' RB	45.7' on Nov 21, 1950 (before Folsom Dam) 43.4' on Feb 19, 1986
CLEAR LAKE (Cache Creek)								
at Lakeport	CKL	8'	9'					11.44' on Feb 24, 1998
CACHE CREEK (Sacramento River Tributary via Yolo Bypass)								
at Rumsey Bridge	RUM	12'	14'					17.88' on Jan 26, 1983
YOLO BYPASS								
at Lisbon	LIS			19' *	26.2'	27.2'	32.1'	27.5' on Feb 20, 1986

Lower Sacramento River System Forecast Points (continued)				
WATERCOURSE		**ADJUST**		**OPERATING**
and Forecast Point	**DATUM 0**	**TO NGVD**	**REMARKS**	**AGENCIES**
SACRAMENTO RIVER				
at Fremont Weir	0' USED	Use -3.0'	Free overflow - no gates. * Weir crest elevation	DWR
at Verona	0' USED	-3.0'		USGS, DWR
at I Street Bridge	0' NGVD		Stages below approximately 10' are influenced by tides.	DWR
FEATHER RIVER (Sacramento River Tributary)				
near Gridley	0' USED	-2.9'	* Right bank only.	DWR
at Yuba City	0' USED	-3.0'	Stages may be influenced by backwater from the Yuba River.	DWR
near Nicolaus	0' USED	-3.3'	* At previous site 1.3 mi. upstream. Stages may be influenced by backwater from Fremont Weir.	DWR
AMERICAN RIVER (Sacramento River Tributary)				
at H Street Bridge	0' USED	-3.07'		DWR
CLEAR LAKE (Cache Creek)				
at Lakeport	1,318.26' NGVD			USGS, DWR
CACHE CREEK (Sacramento River Triburary via Yolo Bypass)				
at Rumsey Bridge	403.7' NGVD			DWR
YOLO BYPASS				
at Lisbon	0' USED	Use -3.0'	* Stages above 14' threaten flooding of tracts at lower end of Yolo Bypass.	DWR

Delta Tide Forecast Points								
		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
DELTA (all stations are tidal)								
Sacramento River at Rio Vista	RVB			8' *	12.5'	13.5'	22'	11.5' on Feb 20, 1986
San Joaquin River at Mallard Island	MAL	not established	not established					
San Joaquin River at Antioch	ANH	not established	not established					
Suisun Bay at Venice Island	VNI	not established	not established					

Delta Tide Forecast Points (continued)				
WATERCOURSE		**ADJUST**		**OPERATING**
and Forecast Point	**DATUM 0**	**TO NGVD**	**REMARKS**	**AGENCIES**
DELTA (all stations are tidal)				
Sacramento River at Rio Vista	0' USED	Use -3.0'	* Stages above 9' threaten flooding of low-lying nearby Delta tracts.	DWR
San Joaquin River at Venice Island	-3' NGVD			DWR
San Joaquin River at Antioch	-3' NGVD			DWR
Suisun Bay at Mallard Island	0' NGVD		Gage maintained by DWR Environmental Services Office.	DWR

San Joaquin River System Forecast Points

		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
SAN JOAQUIN RIVER								
near Newman	NEW			63'	69.4'	70.4'	71.7' *	66.14' on Jan 28, 1997 ** 69.0' on Jan 2, 1868 from floodmarks.
near Patterson	SJP			48'	54.7'	55.7'	58.3' *	51.26' on Mar 4, 1983
near Vernalis	VNS			24.5'	29' *	29.5'	37.3'	34.88' on Jan 5, 1997 **
at Mossdale Bridge	MSD			17' *	26.2'	27.2'	30.7'	24.4' on Dec 10, 1950
MERCED RIVER (San Joaquin River Tributary)								
at Pohono Bridge (near Yosemite)	POH	9.5'	12'					23.43' on Jan 2, 1997 from floodmarks in gagehouse
near Stevinson	MST	67'	71'					73.8' on Dec 5, 1950
TUOLUMNE RIVER (San Joaquin River Tributary)								
at Modesto	MOD	50.5'	55'					71.21' on Jan 4, 1997, with backwater due to debris on railroad trestle
STANISLAUS RIVER (San Joaquin River Tributary)								
at Orange Blossom Bridge	OBB	13'	16'					31.8' on Dec 23, 1956
MOKELUMNE RIVER (San Joaquin River Tributary)								
near Thornton (Benson's Ferry)	BEN	13'	18'					21.69' on Jan 3, 1997
COSUMNES RIVER (Mokelumne River Tributary)								
at Michigan Bar	MHB	7'	12'					18.54' on Jan 2, 1997
near McConnell	MCC	40'	46'					48.5' on Jan 2, 1997 pending further review

San Joaquin River System Forecast Points (continued)

WATERCOURSE and Forecast Point	DATUM 0	ADJUST TO NGVD	REMARKS	OPERATING AGENCIES
SAN JOAQUIN RIVER				
near Newman	0' NGVD		* Right bank only. ** Flow was also outside of the levees due to levee breaks.	USGS, DWR
near Patterson	0' NGVD		* Right bank only.	DWR
near Vernalis	0' NGVD		* Less than 34.2 project design stage due to levee instability. ** Flow was also outside of the levees due to levee breaks.	USGS, DWR
at Mossdale Bridge	0' NGVD		* Stages above 13' threaten trailer courts on water side of levee. Lower stages are influenced by Delta tides.	DWR
MERCED RIVER (San Joaquin River Tributary)				
at Pohono Bridge (near Yosemite)	3,861.66' NGVD			USGS, DWR
near Stevinson	0' NGVD			DWR
TUOLUMNE RIVER (San Joaquin River Tributary)				
at Modesto	0' NGVD			USGS, DWR
STANISLAUS RIVER (San Joaquin River Tributary)				
at Orange Blossom Bridge	117.2' NGVD			DWR
MOKELUMNE RIVER (San Joaquin River Tributary)				
near Thornton (Benson's Ferry)	-3' NGVD		Low stages may be influenced by tides.	DWR
COSUMNES RIVER (Mokelumne River Tributary)				
at Michigan Bar	168.09' NGVD			USGS, DWR
near McConnell	0' USED	Use -3.0'		DWR

East Side Sierra Basins Forecast Points

		NON-LEVEED STREAMS		LEVEED STREAMS				
WATERCOURSE	**CDEC**	**MONITOR**	**FLOOD**	**MONITOR**	**PROJECT**	**DANGER**	**TOP OF**	**PEAK STAGE AND**
and Forecast Point	**ID**	**STAGE**	**STAGE**	**STAGE**	**FLOOD STG.**	**STAGE**	**LEVEE**	**DATE OF RECORD**
SUSAN RIVER								
at Susanville	SSU	11.5'	13'					New gaging station as of January 2002.
TRUCKEE RIVER								
at Farad	FAR	10'	11'					14.5' on Nov 21, 1950
Reno	n/a	9'	11'					14.83' on Dec 23, 1955 (adjusted to current rating)
Vista	n/a	13'	15'					24.4' on Feb 1, 1963 (adjusted to current rating)
CARSON RIVER								
West Fork at Woodford's	WDD	13'	14'					15.36' on Jan 2, 1997 (adjusted to current rating)
East Fork near Gardnerville	GDV	4.5'	7'					13.00' on Jan 3, 1997 (adjusted to current rating)
Carson City	n/a	8'	10'					18.43' on Jan 3, 1997 (adjusted to current rating)
WEST WALKER RIVER								
near Coleville	CLV	7.5'	9'					10.23' on Jan 2, 1997 (prior location) Estimated of peak at current location is 12.0'

East Side Sierra Basins Forecast Points (continued)

WATERCOURSE and Forecast Point	DATUM 0	ADJUST TO NGVD	REMARKS	OPERATING AGENCIES
SUSAN RIVER				
at Susanville	4,200.3' NGVD			DWR
TRUCKEE RIVER				
at Farad	5,153.21' NGVD		Peak stage from floodmarks.	USGS, NWS
Reno	4,444.53' NGVD		Natural levee at approx. 22'. Gage relocated to this location Oct 1998 from approx. 0.5 miles downstream. Major flooding occurs at 13'.	NWS, Washoe Co.
Vista	4,367.6' NGVD		Top of "levee" is approx. 31.0' (4398.6' NGVD). Major flooding occurs at 21.0' (4388.6' NGVD). Gage relocated to this location Oct 1993 from approx. 1.0 miles downstream.	NWS, Washoe Co.
CARSON RIVER				
West Fork at Woodford's	5,754.5' NGVD		Gage relocated to this location Mar 1997 from approx. 200' upstream. Same datum - much different rating.	USGS, NWS
East Fork near Gardnerville	4,985.11' NGVD		Gage relocated to this location summer 2001 from approx. 600' downstream. Same datum and rating.	USGS, NWS
Carson City	4,620.48' NGVD			USGS, NWS
WEST WALKER RIVER				
near Coleville	5,563.25' NGVD		Gage relocated to this location Oct 1997 from approx. 2000' downstream. Previous gage destroyed during Jan 1997 flood.	USGS, NWS

Appendix H. Acronym List

AFB	*Air Force Base*
AO	*Administrative Officer*
CCC	*California Conservation Corps*
CDEC	*California Data Exchange Center*
CDF	*California Department of Forestry and Fire Protection*
CHP	*California Highway Patrol*
CNG	*California National Guard*
CNRFC	*California-Nevada River Forecast Center (National Weather Service)*
Corps	*United States Army Corps of Engineers*
DFM	*Division of Flood Management (DWR)*
DMS	*Division of Management Services (DWR)*
DOC	*Department Operations Center*
DOE	*Division of Engineering (DWR)*
DPLA	*Division of Planning and Local Assistance (DWR)*
DSOD	*Division of Safety of Dams (DWR)*
DWR	*State of California Department of Water Resources*
EOC	*Emergency Operations Center*
FEMA	*Federal Emergency Management Agency*
FEOM	*Flood Emergency Operations Manual (State-Federal Flood Operations Center)*
FOC	*Flood Operations Center*
FOCIS	*Flood Operations Center Information System*
GIS	*Geographical Information System*
ICS	*Incident Command System*
IT	*Information Technology*
LMA	*Levee Maintaining Agency*
MCWRA	*Monterey County Water Resources Agency*
MOU	*Memorandum of Understanding*
NEXRAD	*Next Generation Radar (National Weather Service)*
NWS	*National Weather Service*
O & M	*Division of Operations and Maintenance (DWR)*
OA	*Operational Area*
OCO	*Operations Control Office (DWR State Water Project)*
OCC	*Operations Control Center (DWR State Water Project)*
OES	*Governor's Office of Emergency Services*
OWE	*Office of Water Education*
PIO	*Public Information Officer*
REOC	*Regional Emergency Operations Center*
RFC	*River Forecast Center (National Weather Service)*
RIMS	*Response Information Management System (OES)*
SCVWD	*Santa Clara Valley Water District*
SEMS	*Standardized Emergency Management System*
SOC	*State Operations Center (OES)*
SWP	*State Water Project (DWR)*

USACE *United States Army Corps of Engineers*
USBR *United States Bureau of Reclamation*
USGS *United States Geological Survey*